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ONE IN A THOUSAND--A COMPARATIVE STUDY OF MODERATELY AND HIGHLY GIFTED ELEMENTARY SCHOOL CHILDREN.
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MODERATELY GIFTED AND HIGHLY GIFTED CHILDREN WERE STUDIED TO DETERMINE DIFFERENCES IN EDUCATIONAL DEVELOPMENT, ADJUSTMENT, PHYSICAL DEVELOPMENT, AND FAMILY BACKGROUND. SCHOOL PSYCHOLOGY INTERNS NOMINATED POTENTIALLY CAPABLE PUPILS FROM GRADES THREE TO SIX. FROM THESE, 65 MATCHED PAIRS OF MODERATELY GIFTED (IQ SCORES OF 120 TO 130) AND HIGHLY GIFTED (IQ SCORES OF 148 AND ABOVE) WERE SELECTED. STANFORD-BINET INTELLIGENCE TEST SCORES, IOWA EVERY PUPIL TEST OF BASIC SKILLS SCORES, INSTITUTE FOR PERSONALITY AND ABILITY TESTING CHILDREN'S PERSONALITY QUESTIONNAIRE SCORES, PARENT RATINGS OF CHILD, AUTOBIOGRAPHIES, WHO IS IT SCORES, SCHOOL RECORDS, SOCIOECONOMIC LEVELS, AND HOME INFORMATION WERE OBTAINED. STRUCTURED INTERVIEWS AND INSTRUMENTS MEASURING CREATIVITY AND SELF CONCEPT WERE USED WITH 40 OF THE SUBJECTS. FINDINGS INDICATED THAT THE HIGHLY GIFTED GROUP CAME FROM MORE AFFLUENT BACKGROUNDS, HAD MORE HIGHLY EDUCATED PARENTS, AND RATED HIGHER ON CREATIVITY MEASURES. BOTH GROUPS WERE FOUND TO BE WELL ADJUSTED, AND THERE WERE NO OUTSTANDING DIFFERENCES OF PHYSICAL DEVELOPMENT. TEACHERS DID NOT IDENTIFY 25 PERCENT OF THE HIGHLY GIFTED. LARGE NUMBERS WOULD HAVE BEEN MISSED THROUGH RELIANCE ON GROUP TESTS. THE STUDY RECOMMENDS A STATE REGISTRY OF HIGHLY GIFTED CHILDREN, SUMMER WORKSHOPS FOR TEACHERS, AND EXCESS COST SUPPORT. (RM)

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ONE IN A THOUSAND

A Comparative Study of Moderately and Highly Gifted Elementary School Children

1964
Columbus
Ohio

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Superintendent of Public Instruction

ONE IN A THOUSAND:
A COMPARATIVE STUDY OF HIGHLY AND MODERATELY GIFTED ELEMENTARY SCHOOL CHILDREN

STATE BOARD of EDUCATION • OHIO •

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1964

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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FOREWORD

The State of Ohio has assumed a role of leadership in the education of gifted children. Through its many publications of reports of research and demonstration projects dealing with the gifted, nationwide attention has been directed to Ohio. Throughout the State, more attention is being directed toward the education of the gifted than ever before. The resulting better educational program for gifted children results in better educational opportunities for all children, for the research and demonstration projects concerned with the gifted have not been conducted without the full awareness of the needs of all children and the contributions which increased knowledge and experience with the gifted provides for the improvement of the educational program for all children.

This publication, *One In A Thousand: A Comparative Study of Highly and Moderately Gifted Elementary School Children*, provides us with evidence that the job is not yet finished. Even within the ranks of the gifted are children with different needs. The highly gifted children identified in this study represent a greater number than many might have supposed to exist, and only increases our responsibility to be certain that their education is not being neglected.

The research here reported is unique in that the number of highly gifted children identified is so large, such a distinct difference is established between the groups referred to as "highly gifted" and "moderately gifted," and the use of such carefully matched groups is employed. The utilization of such a wide variety of newly developed standardized instruments as well as instruments developed and adapted particularly for this study offers suggested uses for others. The extensive scale of this study should mark it as one of the major contributions to the research in the area of giftedness.

E. E. HOLT
Superintendent of Public Instruction

ACKNOWLEDGEMENTS

The Project Coordinator wishes to express his appreciation to the many individuals who participated in this study. The 35 school psychology interns who collected the data certainly deserve the greatest amount of appreciation, for their wholehearted cooperation made this Project possible. The psychologists under whom they worked, their University trainers, Mr. Thomas Stephens and Mr. S. J. Bonham, Jr., all contributed to this study with their support.

The group at Kent State University who worked on the study demonstrated clearly that through such a research project learning could take place at the highest level. It was with their never tiring efforts that the data were finally collected, tabulated and reported. The assistants who worked on the study were Herbert Neff, Donald Howard, and Jim Turek. Students who assisted in various phases of the study were Richard Oriole, Barbara Kish, Wanda Louie, Katherine Steiert, and James Evans.

Dr. Kaoru Yamamoto, a member of the faculty of Kent State University, throughout the year, provided constant advice on the project and, in particular, assistance in scoring and interpreting the data on creativity. Mr. John Guidubaldi, research assistant, provided the project with far more than the expected amount of time and diligent effort. To Mr. Guidubaldi and Mrs. Margaret Betzhold, administrative assistant, went the major responsibility for interpreting the Coordinator's efforts to make a final report. In addition to their endless efforts, they contributed to the good feeling which makes a research project either dull routine or exciting. The present research project was indeed exciting due in no small way to their efforts.

Again, Miss Julia Waida, University Editor, Kent State University, provided the cover design, for which all of us express sincere appreciation. The drawing on the cover was done by Fred Barbe; its choice being dictated both by parental pride as well as the belief that giftedness is, indeed, many dimensional.

For the support of the research, greatest appreciation is expressed to the Division of Special Education of the Ohio Department of Education.

Walter B. Barbe

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Chapter I

INTRODUCTION

The study of gifted children has expanded into a major area of research only in the past decade. Previously, educational research was devoted only occasionally to the child with superior mental endowment and even less frequently were administrative adjustments made in the school curriculum for children who differed from the average in the positive direction. Terman's monumental study and Witty's continued research were the major exceptions to the general apathy with which the American public viewed the problems of the gifted.

The study of giftedness has developed through a number of distinct phases beginning with the "impressionalistic and anecdotal" methods used by Nordeau and Lombroso, to the "deductive" methods used by Galton and Ellis, to the biographical method used by Cattell, and finally to the present phase, the study of gifted children begun on such an extensive scale by Terman. The development of new instruments and the refinement of older instruments, as well as the increased awareness of giftedness and its importance have contributed to the current widespread interest.

Efforts of the past decade to broaden and expand the concept of giftedness have met with unexpected success. The very group which was the cause of the increased interest, the highly gifted group, is now in danger of being overlooked. Highly gifted children have come to be considered the same as all those labeled "gifted", even though their giftedness may be at a level which makes them as different from the moderately gifted as the moderately gifted are from the average.

Little attention has been given to those children who score at the highest levels on the Stanford-Binet Intelligence Scales. With the exception of Hollingworth and Terman, investigators in the area of giftedness, have tended to confine their studies to a lower level of giftedness, usually indicated by a lower I.Q. cut-off of between 120 and 130.

The current interest in the full development of the potentiality of gifted children is based primarily upon a national conviction that from this group will come our future leaders in those areas requiring intellectual prowess. Defense, as well as survival, have become closely allied with the present desire to conserve human resources.

Generalizations concerning the superiority of gifted children in areas other than intellectual ability are widespread. These generalizations are made primarily as a result of the findings of Terman's follow-up study of more than 1,000 intellectually gifted youngsters. Supportive studies have occurred regularly, with only an occasional reference to those areas in which the gifted child does not excel.

An examination of the break-down of areas of superiority of gifted children in non-academic, and indeed even in specific parts of some academic areas, raises a question concerning the characterization of the intellectually gifted child being above average in all other areas. By definition the gifted child excels in tests of intelligence, but in academic areas such as arithmetic fundamentals, spelling and handwriting there is some indication that the intellectually gifted child does not excel. In measures of adjustment, the problem arises as to whether the intellectually gifted child is really better adjusted, or is merely bright enough to know the type of response desired.

Historically, there was a definite need for the positive contention of over-all superiority to be attributed to the intellectually gifted child. Previous misconceptions concerning the intellectually gifted child needed to be dispelled. The overwhelming acceptance today of the belief of superiority, however, both on measures which purport to compare gifted children with the standards of their own intellectual peer group as well as on measures which compare the gifted with the standards of the average, results in some problems which are as detrimental to the development of the gifted child as were earlier misconceptions concerning him.

The need is apparent for a re-examination of the characteristics of gifted children in view of the refinement of earlier measuring instruments as well as the development of new methods of assessment. With a view toward program development, which is the current emphasis, understanding of the characteristics of intellectually gifted children is essential. If differences between moderately gifted and highly gifted do exist, questions need to be raised concerning whether current practices are providing for these differences.

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Chapter II

PROBLEMS AND PROCEDURES

The current interest in the gifted has resulted from a general awareness of the need to make special provisions for the potentially capable individual. The level of this potentiality, however, has not been clearly distinguished. For the most part, the image of the gifted child as perceived by the general public has been those children at the highest levels of intelligence. School personnel, however, prompted partly by practical considerations, as well as by awareness of the lack of definitiveness of measures of intelligence, have included children in the ranks of the gifted who are at a much lower level of intelligence. School programs, therefore, have been provided for those who might be called moderately gifted, while the general public has assumed that programs for the gifted mean programs for the highly gifted. Any examination of characteristics, therefore, must be concerned with determining not only the characteristics of the moderately gifted, but also determining the characteristics of the highly gifted.

There can be no clear-cut distinction between moderately gifted and highly gifted children which will not be objected to by at least some people. The use of I.Q. scores to make such a distinction, as has been done in the present study, certainly allows for some disagreement. There is widespread agreement, either stated or implied, by a number of investigators in the area of the gifted that there are differences between moderately and highly gifted children other than the quantitative difference of a higher I.Q. score, but whether or not an I.Q. point can be established which makes this distinction is the debatable point.

Examining extremes, there is little question but that the 120 I.Q. lower cut-off point, so commonly used by schools in assignment of children either to programs or classes for the gifted, includes a large number of moderately gifted children. Indeed, such programs appear to be heavily loaded with children in this category. At the other extreme, were schools to use the 180 I.Q. cut-off as the lower limit of the highly gifted, as Hollingworth did in her book *Children Above 180 I.Q.*, there would be few if any programs existing merely for want of eligible children.

Obviously, some reasonable as well as defensible compromise must be made. In the present study, an I.Q. score of 148 was used for the lower level cut-off. This represents three standard deviations above the norm of 100 I.Q., and it was believed that children scoring at this level could, without much hesitation, be justly referred to as highly gifted. An I.Q. score of 148 or above may be expected to be found no more often than once in every 1,000 children.

With the highly gifted group clearly established, attention was then directed toward identifying the moderately gifted group. The lower I.Q. cut-off of 120 is practiced so frequently that there was no difficulty in deciding upon it. Rather than include any subject scoring from 120 I.Q. up to 148 I.Q., the lower cut-off for the highly gifted group, it was believed that the standard error of the test needed to be considered so that the two groups, moderately gifted and highly gifted, could justifiably be distinguished from one another without any overlap due to test error. For this reason, the standard error being estimated to be about three per cent (or three points) at the average I.Q. of 100 and more than twice that at the higher levels of intelligence, at least a ten point difference or overlap should be allowed. It was therefore decided to distinguish the moderately gifted group clearly from the highly gifted group by excluding from the study any child whose I.Q. score was from 135 through 147. Therefore, the final group identified as moderately gifted contained children with I.Q. scores from 120 through 134, while the highly gifted group contained children with I.Q. scores of 148 and above.

The Department of Education of the State of Ohio, through the Division of Special Education, provides for a one year internship in school psychology supervised by a university faculty member in school psychology. This internship follows a calendar year of academic graduate work in the area of school psychology. The internship requires full-time service in a public school district in a state approved intern center under the direct supervision of a certified school psychologist and the university trainer.

Thirty-five different school psychology interns, representing seven different universities in all sections of the state, participated, each providing from five to ten nominees for the study. No nomination was included in the 280 nominees unless complete information from all of the measures was provided.

Statement of the Problem

The central purpose of this research is to study the characteristics of highly gifted and moderately gifted elementary school children. Specifically, the present study will (1) identify two groups of gifted children, (2) examine their adjustments, family backgrounds, achievements, and educational programs, and (3) determine if significant differences exist between the two groups.

The research reported in this study was planned to make data available pertinent to these problems:

1. In what areas of educational development do moderately and highly gifted elementary school children differ, and to what extent does this difference exist?
2. To what extent do the moderately gifted and highly gifted children in this particular study differ in personal, social, educational and family adjustment?
3. Are there differences in the family backgrounds of moderately and highly gifted children?

Selection of Subjects

Primary reliance for nomination of subjects was placed upon 35 school psychologist interns in the State of Ohio. Each of them was asked to nominate the "eight most capable children (potentially) in your school system on any basis (individual or group I.Q. score; achievement, measured or demonstrated; imaginativeness; etc.)." The children nominated were to be from grades three through six, with none being excluded because of any atypical characteristics "other than high ability." (Additional nominations were provided by three research assistants working on the project.) A parental permission letter was obtained for each subject included in the study.

The number of nominees, for whom complete information was submitted and whose Stanford-Binet I.Q. score was 120 or above, was 280 children. Information on 12 children whose I.Q. scores were below 120 was submitted but not used in this study. From the group of 280 children ranging in I.Q. score from 120 to 180 plus (unadjusted), the final groups to be studied were selected.

Since the purpose of the study was to compare moderately and highly gifted, the subjects were selected from the nominees who met the criteria for these two categories (i.e. moderately gifted, 120-134 I.Q. score; highly gifted, an I.Q. score of 148 and above). A sample of the total population was made to be approximately representative of the percentage of population distribution in metropolitan, urban and rural counties in Ohio.

The final matched pair group contained 130 subjects. Sixty-five highly gifted children were matched with 65 moderately gifted children. The group contained 31 matched pairs of boys and 34 matched pairs of girls.

Personal interviews were conducted by the Project staff with 40 subjects from the matched pair group. An effort was made to have the interview sample representative of the total matched pair group on the basis of grade and sex. In addition to a structured interview, creativity and self-concept instruments were administered.

Collection of Data

The data were collected from 38 school systems by a variety of school personnel throughout Ohio. Parents, teachers and administrators assisted 35 school psychology interns and three Project staff members in obtaining information about the subjects.

For each of the 280 nominees test data, parental and teacher ratings, autobiographies, school records and home information were obtained. This information was obtained from the following sources:

1. Stanford-Binet Intelligence Test, Form L-M (1960).
2. Iowa Every Pupil Tests of Basic Skills, Forms I and II. 1956, Grade Levels, 3-4, and 5-6.
3. IPAT Children's Personality Questionnaire (The CPQ), Form A (1960).
4. Parents' Rating of the Child's Qualities, Diagnostic Child Study Record.
5. Who Is It? (Form A).
6. Autobiography.
7. School Record.
8. Index of Status Characteristics of Family (Adapted from W. L. Warner).
9. Home Information.
10. Parental Permission.

Information was obtained for every subject in all of these ten areas. For the interview group (N=40) additional information was secured from the following sources:

1. Personal Interview Questionnaire.
2. Tell Us About Yourself.
3. Minnesota Battery of Tests of Creative Thinking (Ask-and-Guess Test and Test of Imagination). 1960.

The Stanford-Binet was administered and scored by the school psychology intern. All but a few were administered between October, 1962 and February, 1963, with the few exceptions being children who were tested in the Spring of 1962 by the school psychologist. The same time of testing applies to the Iowa Tests of Basic Skills although the scoring of these was done in the Project office.

The IPAT Children's Personality Questionnaires were administered in the Fall of 1962 by the school psychology interns and were scored in the Project office. The "Who Is It?" sociometric instrument asked the classroom teacher of each subject to list the names of the pupils in her class who best fit each of ten descriptions (i.e. funniest, most popular, etc.). Parents were asked to rate their child on a four-point scale on physical traits, social traits and attitudes, mental qualities, emotional adjustment and work habits. This information was obtained from the Witty Diagnostic Child Study Record. Each child was asked to write an autobiography. These several instruments provided information concerning the child's adjustment from him, his parent, and his teacher.

The school records provided much valuable information. School grades received by the child at each grade level were obtained. The child's attendance record, in addition to previous standardized test scores, provided additional information. Records of special class participation and other administrative adjustments were acquired.

An adaptation of the W. L. Warner Index of Status Characteristics of Family was completed by the school administrator for each child in the study. The Witty Diagnostic Child Study Record, Home Information Report, provided extensive information from the parent about the child's family background.

For those children in the interview sample, a Personal Interview Questionnaire was prepared. This questionnaire provided validity checks on certain information obtained from other sources and added additional information. A "Tell Us About Yourself" scale was prepared in an attempt to determine some facets of self-concept. The "Ask-and-Guess Test" and "Test of Imagination" from the Minnesota Battery of Tests of Creative Thinking were administered to the interview group by members of the Project staff.

Treatment of Data

The data, because of the great variety collected, were treated in different ways. Where it was appropriate, tests for significance were performed. Where this was not applicable, tabulations and percentages were reported. Split-half reliability coefficients and point biserial correlation coefficients were applied to the creativity and self-concept measures. Chi square techniques were applied on consistency checks of father's occupation and number of siblings.

Limitations of Study

The wide scope of the study itself is perhaps its major limitation. Because there has been so little research in the area of the highly gifted, the Project staff felt justified in not investigating exhaustively a few isolated characteristics, but instead comparing on a broad scale the characteristics of moderately and highly gifted elementary school children. Specifically, the limitations of the present study include:

(1) The representativeness of the groups characterized as "highly gifted" and "moderately gifted" is not assured. Generalization must not be made concerning "highly gifted" and "moderately gifted" on the basis of the results of this study, for little attempt was made to make the groups representative even of such groups in Ohio. Efforts to distribute the subjects throughout the state, and to be proportionally representative of the size of the county in which they lived, were made in an attempt to avoid the influence of any particular economic or cultural group, but did *not* make the group representative of highly and moderately gifted children.

(2) The inadequacies of testing instruments to measure the abilities, attitudes, achievements and adjustments of individuals who possess intelligence of such a high level must be recognized. Whether instruments purported to measure intangibles are as valid for gifted children as they are for average children has never been clearly demonstrated. Exactly how much influence on the results may have been exerted because of the subject's awareness of expected responses cannot be determined.

(3) Reliance upon a large number of people for collection of data, regardless of how well trained and supervised they may be—and there were numerous indications of extreme care in administration and scoring—introduces the possibility of differing procedures which may have influenced final results.

There are certainly other limitations of the study, although these are, in the opinion of the Project Coordinator, the major ones. The establishment of control groups which did not over-lap in I.Q. score but were separated by 14 I.Q. points, although it lowered the number of subjects in the study, greatly improved its findings. The interviewing of approximately 30 per cent of the total group, although not a random sample of the group, provided valuable checks on information obtained by other means as well as additional information not obtainable from the entire group. That certain limitations existed was recognized before the study was undertaken, but it is believed that the methods used best fulfilled the purpose of the study.

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Chapter III

COMPOSITION AND FAMILY BACKGROUND OF THE GROUP

The family background of gifted students has received attention in the research primarily in an attempt to add evidence to the nature-nurture controversy. There has been little attempt, however, to distinguish between highly gifted and moderately gifted subjects on factors of family background. This type of comparison is certainly as valid as is the comparison of gifted subjects with average subjects. It must be clear that neither type of comparison will provide evidence to support an argument in favor of either environmental or hereditary factors exclusively.

Group Division

As was explained in the section on Procedures, the subjects were divided into matched pairs. There were 31 matched pairs of boys and 34 matched pairs of girls; the final total group therefore containing 65 moderately gifted and 65 highly gifted elementary school children. Of the total groups, 40 were in the interview sample. This break-down indicating the number of subjects in the total group and in the sample group by grade level is indicated in Table I.

I.Q. Distribution

Selection of subjects for the present study was determined by I.Q. score, sex and grade level. Highly gifted was defined as an I.Q. score of 148 and above, while moderately gifted was defined as an I.Q. score from 120 to 135. Table II presents the distribution of I.Q. scores within each group.

The mean I.Q score of the moderately gifted group was 129, while the mean I.Q. score of the highly gifted group was 158. The mean I.Q. score of the moderately gifted male group was only slightly lower than the mean I.Q. score of the moderately gifted female group (128 and 129, respectively). The mean I.Q. score of the highly gifted male group was again lower than the mean I.Q. score of the highly gifted female group (154 and 162, respectively).

The range of I.Q. scores in the moderately gifted group was established by the study as being from 120 to 135, as also was the lower I.Q.

score limit of the highly gifted group (148). The range in the highly gifted group extended upward to an I.Q. score of 174. No adjustment was made in any I.Q. score for the low ceiling of the test, with the highest I.Q. score in the tables being reported for those individuals who went above the tables. Twenty-one of the 31 males in the high group passed at least one of the items at the Superior Adult III level, while 28 of the 34 females passed at least one of the items at the Superior Adult III level. The ceiling operated to the greatest disadvantage of the children in the higher grades (5th and 6th), for every 6th grade child in the study passed at least one item at the Superior Adult III level, and all but two at the 5th grade level did the same. It could be supposed that had there been a higher ceiling, over three-fourths of the children in the high group would have had a chance of obtaining a still higher I.Q. score. There can be no question but that the high group is truly highly gifted in intellectual prowess, and may indeed even be comparable with previous studies of children reported at much higher I.Q. score levels where either adjusted scores were obtained or the 1916 or 1937 Binet tests were used and the age of testing was younger and resulted in the possibility of higher scores.

Table I

DISTRIBUTION OF SUBJECTS BY GRADE LEVEL AND SEX

GRADE	GROUPS	NUMBER IN MATCHED GROUPS		NUMBER IN INTERVIEW SAMPLE	
		MALE	FEMALE	MALE	FEMALE
3	Highly Gifted	5	4	2	2
	Moderately Gifted	5	4	2	2
4	Highly Gifted	8	5	1	2
	Moderately Gifted	8	5	1	2
5	Highly Gifted	9	12	4	3
	Moderately Gifted	9	12	4	3
6	Highly Gifted	9	13	3	3
	Moderately Gifted	9	13	3	3

Total Matched Highly Gifted Males—31, Interview Sample—10
Total Matched Moderately Gifted Males—31, Interview Sample—10
Total Matched Highly Gifted Females—34, Interview Sample—10
Total Matched Moderately Gifted Females—34, Interview Sample—10

Table II

DISTRIBUTION OF I.Q. SCORES OF 130 MODERATELY AND HIGHLY GIFTED SUBJECTS

	MODERATELY GIFTED				HIGHLY GIFTED						
	120-124	125-129	130-134	TOTAL	145-149	150-154	155-159	160-164	165-169	170-174	TOTAL
Males	7	11	13	31	7	16	3	1	4	0	31
Females	1	17	16	34	1	7	7	6	4	9	34

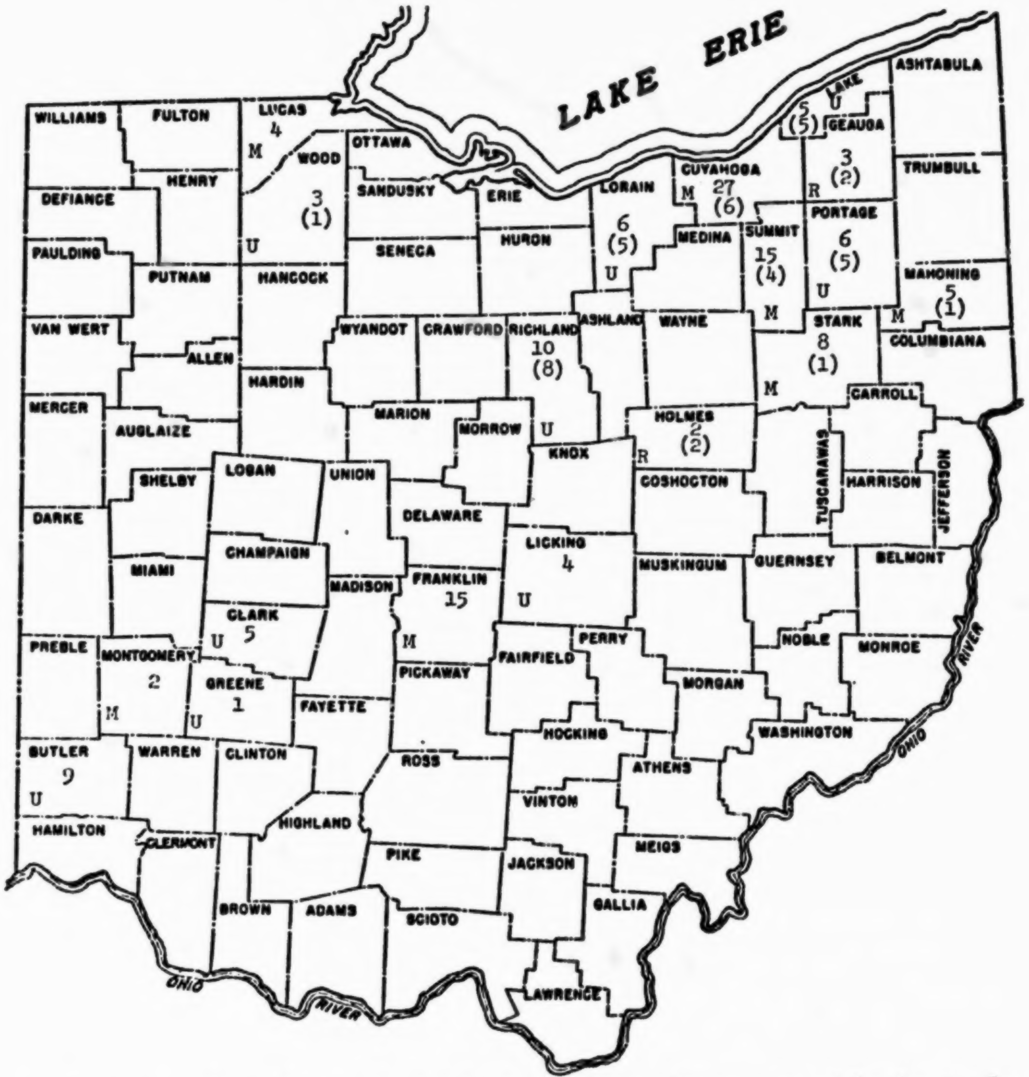
Interview Sample

In order to obtain additional data which could be obtained by no other means than a personal interview, a sample of the total group was selected. Ten subjects were selected from each of the four sex-I.Q. score categories, providing a total interview sample of 40 subjects.

Factors which determined selection of subjects for the interview sample were: (1) grade placement, (2) sex, (3) I.Q. score and (4)

Figure 1

MAP OF OHIO SHOWING DISTRIBUTION OF SUBJECTS BY COUNTY RATING


LAKE ERIE
WILLIAMS
FULTON
LUCAS 4 M
WOOD 3 (1) U
OTTAWA
HENRY
DEFIANCE
SANDUSKY
ERIE
LORAIN 6 (5) U
CUYAHOGA M 27 (6)
LAKE 5 (5) U
GEAUGA 3 (2) R
ASHTABULA
TRUMBULL
PAULDING
PUTNAM
HANCOCK
SENECA
HURON
MEDINA
SUMMIT 15 (4) M
PORTAGE 6 (5) U
MAHONING M 5 (1)
VAN WERT
ALLEN
WYANDOT
CRAWFORD
RICHLAND 10 (8) U
ASHLAND
WAYNE
STARK 8 (1) M
COLUMBIANA
MERCER
AUGLAIZE
HARDIN
MARION
MORROW
KNOX
HOLMES 2 (2) R
CARROLL
TUSCARAWAS
HARRISON
JEFFERSON
SHELBY
LOGAN
UNION
DELAWARE
COSHOCTON
DARKE
MIAMI
CHAMPAIGN
LICKING 4 U
MUSKINGUM
GUERNSEY
BELMONT
MADISON
FRANKLIN 15 M
CLARK 5 U
PRESBLE
MONTGOMERY 2 M
GREENE 1 U
FAYETTE
PICKAWAY
FAIRFIELD
PERRY
NOBLE
MONROE
MORGAN
BUTLER 9 U
WARREN
CLINTON
ROSS
HOCKING
ATHENS
WASHINGTON
HAMILTON
CLERMONT
HIGHLAND
VINTON
MEIGS
PIKE
JACKSON
GALLIA
BROWN
ADAMS
SCIOTO
LAWRENCE
OHIO RIVER

The higher number refers to the total selection from that county, while the number in parentheses refers to the interview sample. County ratings are indicated by "M" (metropolitan), "U" (urban), and "R" (rural).

county rating. The distribution of the subjects by grade level approximated that of the total matched population. There were 20 matched pairs of male subjects and 20 matched pairs of female subjects in the interview sample. In every case a highly gifted subject was matched with a moderately gifted subject. An attempt was made to have a distribution by county rating similar to that in the total upper-elementary school population in Ohio, as indicated in Figure 1 and Table III.

Number of Children in Family and Their Ordinal Position

There has been much observation, but little research, about the number of children in families of gifted children and the order of birth of the gifted child within the family. Reports have varied indicating that the gifted child comes from a family in which there are few children, and consequently the order of birth is either first or second, to an occasional report of a gifted child coming from an unusually large family. In any case, the presentation of data concerning the number of children in a family and the ordinal position of the gifted child must be examined carefully. Far more attention must be given to the abilities of siblings of gifted children, although Terman did provide some evidence concerning this. Because of the relative youth of the parents themselves, the size of families containing gifted children can by no means be stated with any finality.

Table III

PERCENTAGE DISTRIBUTION OF SUBJECTS IN INTERVIEW SAMPLE BY COUNTY RATING

	RATINGS OF COUNTY					
	METRO-POLITAN		URBAN		RURAL	
	Number	%age	Number	%age	Number	%age
Highly Gifted	6	15	12	30	2	5
Moderately Gifted	6	15	12	30	2	5
Total Interview Group	12	30	24	60	4	10
Expected Percentages*		28.3		69.5		2.3

* Computed from state census (1960) and state *Educational Directory, 1961-1962.*

In one instance in the study, twin boys were included. One case of a child being adopted was reported, although it is not unlikely that there may have been other adoptions which were not reported. Indeed, any reluctance to report adoption would have been due to an effort to identify completely as the child's natural parent, for without exception the children included in this study demonstrated those healthy traits so frequently attributed to gifted youngsters.

The mean number of children in the families of the highly and moderately gifted groups differed only slightly, the difference not being significant. The families of the highly gifted boys averaged 2.4 children while the highly gifted girls averaged 2.4. The families of the moderately gifted boys averaged 2.9 children, while those of the moderately gifted girls averaged 2.3. The mean total number of children in the families of the highly gifted children was 2.5, while the mean total number of children in the families of the moderately gifted was 2.6. This slight difference is not significant.

It is apparent from these figures, however, that the gifted children in this study came from relatively small families. In each of the groups the size of the family averaged slightly less than three children.

The order of birth of gifted children has been the subject of some discussion. By being the first born, is the child more likely to be gifted because his parents can devote more time to him or because he must grow up more quickly to assume responsibility as the older child, or is the advantage given to younger children in a family who can learn from the older brothers and sisters? No definitive answer has ever been given, nor can one be expected from this study.

The majority of the children in the study were first born. Sixty per cent of the highly gifted subjects were first born, while 54 per cent of the moderately gifted subjects were first born. Table IV presents the number of children in the family and the ordinal position of the subjects.

Marital Status of Parents

More than 90 per cent of both the highly gifted and the moderately gifted group come from families in which the parents are married and living together (93.8 and 90.7 per cent, respectively). There are only five reported cases of divorce, with three of these occurring in the families of the moderately gifted female group.

Age of Parents

The median age of the subjects was about 10, with the majority being first born children. The median age range of both mothers and fathers of the subjects was in the 35 to 40 age range for the highly gifted boys and the moderately gifted boys and girls, but was in the 40 to 45 age range for the highly gifted girls. The fathers' ages were from the 30 to

35 range to the 55 to 60 range, while the mother's ages were from the 25 to 30 age range to the 55 to 60 range.

This would seem to indicate that the subjects in the present study had relatively young parents, with little difference in the ages of their mothers and fathers. For some unknown reason, perhaps chance, the highly gifted girls had parents slightly older than did the other groups.

Religious Affiliation

About 60 per cent of the subjects in the present study came from Protestant families, in which they and both of their parents were of the same religious belief. Since only public school children were included in the study, the percentage of Catholic children (about 12 per cent) is lower than the proportional share in the general population, but probably approximates the Catholic enrollment in the public schools. About eight per cent reported being of the Jewish faith, and about six per cent (2 subjects in each group) of the subjects and their mothers were Protestants while their fathers had no religious affiliation.

Economic Status

Indications of the economic status of the subjects in the present study included such factors as occupational level of parents, source of income, ratings on house type, ratings on dwelling area, and the economic status of home and community in which the home is located. Occupational level will be discussed under a separate heading. School authorities provided ratings for each child on source of parent's income, house type and dwelling area on an Index of Status Characteristics, adapted from Warner's scale. Parents rated the economic status of the home and the community in which the home is located, each on a four point scale, on the Witty Home Information Report.

Ratings by school authorities of the source of parents' income indicate that the majority of the parents of the subjects in each of the groups are salaried. There is a difference, significant at the .01 level, favoring the highly gifted group. The higher ranking on the scale denotes higher income, as the descriptions of each category clearly indicate. (Found in the Appendix and presented to the school authorities at the time the rating was made.) The findings indicate that the highly gifted children come from wealthier family backgrounds than do the moderately gifted.

Ratings of house type by school authorities yield much the same information. While most of the subjects in each of the groups come from "good" or "average" houses, there is a difference favoring the highly gifted group which is significant at the .05 level.

The dwelling area was also rated by school authorities for each of the subjects. It was believed by those making this study that this would be the most reliable of the ratings, for the school authorities were in a better position to rate dwelling areas, even if they did not specifically know the more detailed information regarding each subject such as type of house and source of parent's income. The results, however, were consistent with those found in the other two areas. The difference, again favoring the highly gifted group, was significant at the .01 level.

When parents were asked to rate the economic status of their home, however, the higher rating assigned by the school authorities to the highly gifted group did not persist. All but one of the parents in both groups rated their home as either "comfortable" or "moderate," with one parent of a highly gifted girl rating their home as "marginal." There was practically no difference in the way in which the parents of highly gifted and the parents of moderately gifted rated their homes.

There was greater variability in the rating of their community by parents of gifted subjects, but the differences in the total group ratings were only slight and were not significant. The parents of one moderately gifted girl and one highly gifted girl rated their homes as "poor," and four parents did not reply to this question.

Clearly the question must be raised whether school authorities, in rating economic background factors of highly gifted subjects, are not influenced by the "halo" effect and rate highly gifted children higher than may actually be true. Although the group to which a particular subject would be assigned was not definitely known by the administrator, there is some likelihood that he could be influenced by his previous conceptions of the subject's degree of giftedness.

Interestingly enough, parents of both groups tended to rate their homes and communities in the high average classification. This similarity of ratings is perhaps a function of an attitude of "false modesty" on the part of the parents of the highly gifted.

Educational Level of Parents

As part of the Home Information Report, the parents were asked to state the highest school grade attended by the father and the mother. It was readily apparent that both the mothers and the fathers of the highly gifted group have more education than the mothers and fathers of the moderately gifted group. It was also apparent that in both the highly gifted group and the moderately gifted group, the fathers had more education than the mothers, although the fathers of the moderately gifted children did not have more education than the mothers of the highly gifted group.

The fathers of the highly gifted boys were the best educated of the parents, about 49 per cent having five years or more of college. Only about 30 per cent of the fathers of the highly gifted girls had five or more years of college. Close to 30 per cent of the fathers of the moderately gifted boys and 21 per cent of the fathers of moderately gifted girls had five or more years of college.

Sixty-eight per cent of the fathers of the highly gifted boys had completed four years of college, while 53 per cent of the fathers of the highly gifted girls had this much schooling. Fifty-two per cent of the fathers of moderately gifted boys had completed four years of college, while only 41 per cent of the fathers of moderately gifted girls had this much schooling.

Table IV

NUMBER OF CHILDREN IN FAMILY AND ORDINAL POSITION OF SUBJECT

	ORDER OF BIRTH	NUMBER OF CHILDREN IN FAMILY (Including Subject)						
		1	2	3	4	5	6	7
High Boys	First	1	9	6	2	1	–	–
	Second	–	2	3	1	–	–	–
	Third	–	–	4	–	–	–	–
	Fourth	–	–	–	1	–	–	–
	Fifth	–	–	–	–	1	–	–
	Sixth	–	–	–	–	–	–	–
	Seventh	–	–	–	–	–	–	–
Moderate Boys	First	2	8	2	4	–	–	–
	Second	–	4	2	4	1	–	–
	Third	–	–	2	–	–	–	–
	Fourth	–	–	–	2	–	–	–
	Fifth	–	–	–	–	–	–	–
	Sixth	–	–	–	–	–	–	–
	Seventh	–	–	–	–	–	–	–
High Girls	First	5	12	1	1	1	–	–
	Second	–	5	1	1	–	–	–
	Third	–	–	3	–	1	1	–
	Fourth	–	–	–	1	–	–	–
	Fifth	–	–	–	–	–	–	–
	Sixth	–	–	–	–	–	–	–
	Seventh	–	–	–	–	–	–	1
Moderate Girls	First	1	8	3	6	–	1	–
	Second	–	6	5	1	1	–	–
	Third	–	–	–	1	–	–	–
	Fourth	–	–	–	1	–	–	–
	Fifth	–	–	–	–	–	–	–
	Sixth	–	–	–	–	–	–	–
	Seventh	–	–	–	–	–	–	–

Table V

SCHOOL RATING OF STATUS CHARACTERISTICS OF GIFTED SUBJECTS ON SOURCE OF PARENTS' INCOME

SOURCE OF INCOME	MALE				FEMALE			
	HIGHLY GIFTED		MODERATELY GIFTED		HIGHLY GIFTED		MODERATELY GIFTED	
	Number	%age	Number	%age	Number	%age	Number	%age
Inherited Wealth	0	0	0	0	0	0	0	0
Earned Wealth	0	0	2	6.5	1	2.9	0	0
Profits and Fees	6	19.4	2	6.5	7	20.6	5	14.7
Salary	24	77.4	19	61.3	21	61.8	21	61.8
Wages	1	3.2	7	22.6	5	14.7	8	23.5
Private Relief	0	0	0	0	0	0	0	0
Relief	0	0	0	0	0	0	0	0
No Report	0	0	1	3.2	0	0	0	0

High males > moderate males at .02 level of significance and the high total > moderate total at .01 level of significance.

Table VI

SCHOOL RATING OF STATUS CHARACTERISTICS OF GIFTED SUBJECTS ON HOUSE TYPE

HOUSE TYPE	MALE				FEMALE			
	HIGHLY GIFTED		MODERATELY GIFTED		HIGHLY GIFTED		MODERATELY GIFTED	
	Number	%age	Number	%age	Number	%age	Number	%age
Excellent Houses	0	0	2	6.5	1	2.9	0	0
Very Good Houses	6	19.4	1	3.2	2	5.9	6	17.6
Good Houses	13	41.9	13	41.9	17	50.0	8	23.5
Average Houses	11	35.5	12	38.7	12	35.3	17	50.0
Fair Houses	1	3.2	2	6.5	2	5.9	1	2.9
Poor Houses	0	0	0	0	0	0	0	0
Very Poor Houses	0	0	0	0	0	0	0	0
No Report	0	0	1	3.2	0	0	2	5.9

High males > moderate males at .01 level of significance.
High girls > moderate girls at .05 level of significance.

Table VII

SCHOOL RATING OF STATUS CHARACTERISTICS OF GIFTED SUBJECTS ON DWELLING AREA

DWELLING AREA	MALE				FEMALE			
	HIGHLY GIFTED		MODERATELY GIFTED		HIGHLY GIFTED		MODERATELY GIFTED	
	Number	%age	Number	%age	Number	%age	Number	%age
Very High	0	0	2	6.5	1	2.9	2	5.9
High	7	22.6	1	3.2	4	11.8	3	8.8
Above Average	17	54.8	15	48.4	23	67.6	15	44.1
Average	6	19.4	12	38.7	5	14.7	10	29.4
Below Average	0	0	0	0	1	2.9	1	2.9
Low	0	0	0	0	0	0	0	0
Very Low	0	0	0	0	0	0	0	0
No Report	1	3.2	1	3.2	0	0	3	8.8

High males > moderate males at .01 level of significance.
Total high group > total moderate group at .01 level of significance.

Table VIII

RATING OF ECONOMIC STATUS OF HOME BY PARENTS OF GIFTED SUBJECTS

		AFFLUENT		COMFORTABLE		MODERATE		MARGINAL		DEPENDENT		NO RESPONSE	
		Number	%age	Number	%age	Number	%age	Number	%age	Number	%age	Number	%age
Male	Highly Gifted	1	3.2	23	74.2	7	22.6	0	0	0	0	0	0
	Moderately Gifted	0	0	20	64.5	11	35.5	0	0	0	0	0	0
Female	Highly Gifted	0	0	15	44.1	18	52.9	1	2.9	0	0	0	0
	Moderately Gifted	0	0	22	64.7	11	32.4	0	0	0	0	1	2.9
Total	Highly Gifted	1	.8	38	29.3	25	19.5	1	.8	0	0	0	0
	Moderately Gifted	0	0	42	32.3	22	16.9	0	0	0	0	1	.8

Table IX

RATING OF COMMUNITY BY PARENT OF GIFTED SUBJECT

		EXCELLENT		GOOD		FAIR		POOR		NO RESPONSE	
		Number	%age	Number	%age	Number	%age	Number	%age	Number	%age
Male	Highly Gifted	14	45.2	16	51.6	1	3.2	0	0	0	0
	Moderately Gifted	7	22.6	18	58.1	4	12.9	1	3.2	1	3.2
Female	Highly Gifted	8	23.5	21	61.8	4	11.8	0	0	1	2.9
	Moderately Gifted	12	35.3	19	55.9	1	2.9	0	0	2	5.9
Total	Highly Gifted	22	33.8	37	56.9	5	7.7	0	0	1	1.5
	Moderately Gifted	19	29.2	37	56.9	5	7.7	1	1.5	3	4.6

It is readily apparent that the parents of the subjects in the present study are exceptionally well-educated. This makes the problem of those parents who did not have the advantage of advanced education even more serious. About 6.5 per cent of the fathers of highly gifted boys and almost 12 per cent of the fathers of highly gifted girls had less than a high school education. Over 19 per cent of the fathers of moderately gifted boys and 11 per cent of the fathers of moderately gifted girls have less than a high school education.

The educational level of the mothers of the children in this study, while less than that of the fathers, is similar in the pattern it follows. The best educated group are the mothers of the highly gifted boys and girls, about 16 per cent and 18 per cent respectively having five or more years college. In the case of the mothers, those of the highly gifted girls are slightly better educated than are the mothers of the highly gifted boys. Only about one-third as many mothers have five or more years of college than do the fathers. About 6.5 per cent and six per cent of the mothers of moderately gifted boys and girls, respectively, have five or more years of college.

Almost 50 per cent of the mothers of highly gifted boys and highly gifted girls have four years of college, while about 23 per cent of the mothers of the moderately gifted boys and girls have four years of college. All of the mothers of highly gifted boys have at least a high school education, but over 19 per cent of the mothers of moderately gifted boys have less than a high school education. About nine per cent of the mothers of highly gifted and moderately gifted girls have less than a high school education

The educational level of the mothers tends to follow, although at a slightly lower level, that of the fathers. The educational level of the groups of parents is exceptionally high, with almost startling exceptions at the less than high school graduation level.

Occupational Level of Father

The occupational level of the fathers of the children in this study assumed particular significance in interpreting any differences which might be found between the moderately and highly gifted groups. Whether these differences were ones due to ability level, or some other artifact such as occupational level of parents, could probably not be answered with certainty. It was essential, however, to determine if differences in occupational level existed so that it would be known if any such possible differences might have influenced other comparisons between the two groups of children.

Table X

RATING OF OCCUPATIONS OF FATHERS OF GIFTED SUBJECTS BY SCHOOL AUTHORITIES

(From Index of Status Characteristics, W. L. Warner, adapted)

CATEGORY	MALES				FEMALES			
	HIGHLY GIFTED		MODERATELY GIFTED		HIGHLY GIFTED		MODERATELY GIFTED	
	Number	%age	Number	%age	Number	%age	Number	%age
Highly Professional	7	22.6	6	19.4	7	20.6	4	11.8
Professional	15	48.4	11	35.5	14	41.2	11	32.4
Semi-professional	6	19.4	8	25.8	6	17.6	10	29.4
Sales and Clerical	1	3.2	3	9.7	7	20.6	6	17.6
Skilled	1	3.2	2	6.5	0	0	2	5.9
Unskilled	0	0	0	0	0	0	0	0
No Response	1	3.2	1	3.2	0	0	1	2.9

Table XI

OCCUPATIONS OF FATHER REPORTED BY PARENTS ON HOME INFORMATION REPORT

OCCUPATIONS	MALES				FEMALES			
	HIGHLY GIFTED		MODERATELY GIFTED		HIGHLY GIFTED		MODERATELY GIFTED	
	Number	%age	Number	%age	Number	%age	Number	%age
Professional and Managerial	21	67.7	16	51.6	20	58.8	17	50.0
Clerical	3	9.7	2	6.5	4	11.8	1	2.9
Service	3	9.7	1	3.2	2	5.9	5	14.7
Agriculture	1	3.2	1	3.2	1	2.9	0	0
Skilled	1	3.2	6	19.4	7	20.6	8	23.5
Semi-skilled	2	6.5	3	9.7	0	0	1	2.9
Unskilled	0	0	1	3.2	0	0	0	0
Unemployed	0	0	1	3.2	0	0	0	0

The rating of occupations of fathers by school authorities was done on the Index of Status Characteristics, Occupations, of Warner. The descriptions as used by Warner, with only minor modifications, were presented to the school authorities. The results are reported in Table X. Over 70 per cent of the fathers were rated in the highly professional or professional category for the fathers of the highly gifted male subjects, with only slightly over 60 per cent of the fathers of the highly gifted female subjects being so rated. Fifty-five per cent of the fathers of the moderately gifted male subjects were rated in the highly professional and professional categories, while only about 44 per cent of the fathers of the moderately gifted female were so rated.

Using the *Dictionary of Occupational Titles* classification for the parents' rating of the father's occupation on the Home Information Report provided the information reported in Table XI. The reports are remarkably similar for the fathers' occupations of the highly gifted male and highly gifted female subjects. The differences for the moderately gifted groups are greater, but are still close.

A check was made on the accuracy of the children's responses to their father's occupation by comparing the reports of the children in a personal interview with the occupation of the father as reported by the parent. The moderately gifted girls were accurate only approximately 50 per cent of the time, while the highly gifted girls had 62 per cent accuracy. Maintaining their reputation for variability, the boys were both the most and least accurate with the moderately gifted boys being accurate only 45 per cent of the time and the highly gifted boys being accurate 73 per cent of the time. The highly gifted group was accurate approximately 67 per cent of the time, while the moderately gifted group was accurate only 48 per cent of the time. The errors generally were either over-statement of the level of the father's occupation, or knowledge of where he worked without specific knowledge of the type of work which he did.

Summary

Thirty-one highly gifted (148 I.Q. score and above) elementary school boys and 34 highly gifted elementary school girls were matched with equal numbers of moderately gifted boys and girls (I.Q. scores between 120 and 135) in the same grade and in the same county classification from throughout the State of Ohio. The mean I.Q. score of the highly gifted group (N=65) was 158, while the mean I.Q. score of the moderately gifted group (N=65) was 129.

The children in this study were found to be from small families (mean size of family, 2.5 children) and the majority were found to be first born. Their parents (about 90 per cent) were married and living together, and were in the mean age range of 35 to 40, except for the highly gifted female group whose parents were in the 40 to 45 age range. The children were mostly (about 60 per cent) from Protestant homes. There is a variety of findings which suggest significant differences between the economic level of the moderately gifted and the highly gifted groups, without exception in favor of the highly gifted group.

The educational level of the fathers of the highly gifted was higher than the educational level of the fathers of the moderately gifted. The same was true of the educational level of the mothers of the subjects in this study.

Occupational ratings of fathers of subjects, done both by the parents themselves and by the school authorities showed remarkable similarity, with more of the fathers of highly gifted subjects being in the professional levels. The children themselves were not good sources of information about the occupational level of their fathers.

Taken in its entirety, the highly gifted subjects came from a more affluent background than did the moderately gifted; the educational level of their parents was higher; and in all other respects which were checked, the highly gifted group appeared to be favored.

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Chapter IV

EDUCATIONAL DEVELOPMENT AND ABILITIES

The subjects in the present study were all chosen on the basis of their intellectual ability, as measured by their ability to perform on a standardized, individual measure of intelligence. There can be no doubt but that such tests measure academic potential, or the ability to achieve in school, so that the outstanding results obtained and reported in this section are what should be expected.

Because of the expected superior achievement record, it was not the purpose of this section to report merely the results of achievement testing, although this will be done, but to present data collected from moderately and highly gifted groups of boys and girls in terms of their educational experiences, achievements and abilities.

Kindergarten Attendance

Data concerning kindergarten attendance was collected only from the interview sample. Thirty-one of the interview sample attended kindergarten. Of these, 19 were from the highly gifted group and 12 were from the moderately gifted group. Nine of the interview group did not attend kindergarten. All of the highly gifted girls (100 per cent) in the interview sample attended kindergarten, while 90 per cent of the highly gifted boys attended. Seventy per cent of the moderately gifted girls and 50 per cent of the moderately gifted boys attended kindergarten.

Grade Skipping

Information concerning grades skipped was obtained from the parents' report as well as from the children themselves in the interview sample. The children were completely reliable in reporting if they had skipped a grade, for each instance reported by a child was verified by the report of the parent.

Thirteen instances of grade skipping, or ten per cent of the total group, were reported by parents of the subjects in this study. Only an insignificant number of the highly gifted boys (N=2) and the moderately gifted boys (N=1) and girls (N=1) were grade skipped and all of these were in the first grade. In the highly gifted group of girls, however, a total of nine (26.5 per cent) were grade skipped. Three highly gifted girls skipped the first grade, four skipped the second, one skipped the third, and one skipped the fifth. There is a clear indication that most of the grade skipping, as it occurred with this group of subjects, is done by highly gifted girls.

Age Learned to Read

The ages at which the children in this study learned to read was from one year old through seven years old, with only one case reported at age one and three at age seven. The modal point was age six for each of the four groups, with mean ages of 5.3 years for the highly gifted boys, 5.1 for the highly gifted girls, 5.7 for the moderately gifted boys and 5.6 for the moderately gifted girls. It is apparent that the highly gifted group, both boys and girls, learned to read slightly earlier than did the moderately gifted group, and that a sizeable number of each of the four groups learned before the age of six. In the case of the highly gifted girls, more than half learned to read before the age of six. The two reported cases who learned to read at age one and age two were both highly gifted boys, and two of the three who did not learn to read until age seven were moderately gifted boys and the other one was a moderately gifted girl.

Rate of Progress in School

Since all of the subjects in this study were classified as gifted, either highly or moderately, information concerning their rate of progress in school, as their parents perceived it, was thought to be important. As was expected, the majority of the responses, ranging from 61 per cent for the moderately gifted boys to 85 per cent for the highly gifted girls, stated that the child had a fast rate of progress. A higher percentage of girls, both highly and moderately gifted, were reported as having fast progress than boys. About 61 per cent of the moderately gifted boys and 64.5 per cent of the highly gifted boys were reported as having made fast progress in school. Almost 71 per cent of the moderately gifted girls and 85.3 per cent of the highly gifted girls were reported as making fast progress.

Obviously such a rating indicates faster progress for the highly gifted girls, and faster progress for both highly and moderately gifted girls than that for boys. There was little difference in the reported rate of school progress of moderately and highly gifted boys.

Special Class Attendance

With the increased attention being given to gifted children, and the state wide effort to provide educational opportunities for gifted children, it was expected that many of the subjects would be participating in some type of special program. Certainly for the highly gifted group, who score at such a high level above the average group, it was expected that provisions would be made. Such was not the case, however. Only six of the children, or less than ten per cent, in the highly gifted group had participated in any type of special class during the regular school day. Only four of the moderately gifted group, or about six per cent, had participated in special classes.

Ten of the highly gifted group and two of the moderately gifted group had participated in some type of summer classes. Actually, this small number does not indicate any real effort on the part of the parents or the schools to make any special educational provisions for these children other than what might be available in the regular classroom.

Iowa Tests of Basic Skills

The Iowa Tests of Basic Skills were administered to every child in the study. Excess grade equivalents were determined for each child on each of the five sub-tests on the Iowa tests (Vocabulary, Reading, Total Language, Total Work Study Skills, Total Arithmetic). Mean excess grade equivalents were then computed for each of the four groups of subjects (moderately gifted boys, moderately gifted girls, highly gifted boys, highly gifted girls). Differences between the mean excess grade equivalents were calculated and tests of significance were computed to determine the level of significance. Obtained data concerning these significant differences are reported in Table XII A and B.

In no instance did any child score below his grade placement on any area of the Iowa Test. This is probably an artifact of the procedure by which the children were selected for this study. The study might indeed have been labeled "high achieving" children as well as gifted children. The mean achievement for each of the four groups was at least two years above their actual grade placement.

There was a significant difference at the .01 level on total mean excess grade equivalents favoring the highly gifted group over the moderately gifted group. The ceilings of many achievement tests are not sufficiently high to measure completely the achievement of gifted children. In the present study the ceilings of the tests used were sufficiently high to indicate a significant difference between moderately and highly gifted children favoring the highly gifted group.

As the gifted children progressed through school, remembering that the subjects were distributed from grade three through grade six, the highly gifted group demonstrated a greater increase in excess grade equivalents than did the moderately gifted group. The gap between the highly gifted and moderately gifted group increases each year as the children go from grade to grade in the elementary school. Education increases the differences in children's achievement in direct proportion to their mental ability.

Table XII A

PERFORMANCE ON IOWA TESTS OF BASIC SKILLS — BOYS

BOYS	MEAN GRADE EQUIVALENT LEVEL				
	Vocabulary	Reading Comprehension	Language Skills	Work Study Habits	Arithmetic Skills
GRADE 3					
Highly Gifted	4.9	5.5	5.3	5.4	4.6
Moderately Gifted	4.8	4.7	4.7	5.1	4.8
Excess Grade Equivalent Difference	0.1	0.8	0.6	0.3	—0.2
GRADE 4					
Highly Gifted	7.3	8.3	7.1	6.5	5.9
Moderately Gifted	6.1	7.3	6.7	6.2	6.0
Excess Grade Equivalent Difference	1.2*	1.0	0.4	0.3	—0.1
GRADE 5					
Highly Gifted	8.8	9.0	9.3	7.9	6.9
Moderately Gifted	7.9	7.9	8.6	7.3	6.8
Excess Grade Equivalent Difference	0.9	1.1	0.7	0.6	0.1
GRADE 6					
Highly Gifted	10.3	10.1	10.2	9.8	9.1
Moderately Gifted	9.0	9.1	9.6	8.9	8.0
Excess Grade Equivalent Difference	1.3**	1.0**	0.6	0.9**	1.1**

**Excess grade equivalent significant at the .01 level
*Excess grade equivalent significant at the .05 level

Table XII B

PERFORMANCE ON IOWA TESTS OF BASIC SKILLS — GIRLS

GIRLS	MEAN GRADE EQUIVALENT LEVEL				
	Vocabulary	Reading Comprehension	Language Skills	Work Study Habits	Arithmetic Skills
GRADE 3					
Highly Gifted	6.5	6.9	5.5	5.6	5.4
Moderately Gifted	6.0	7.7	5.6	5.0	5.3
Excess Grade Equivalent Difference	0.5	—0.8	—0.1	0.6	0.1
GRADE 4					
Highly Gifted	7.3	8.9	8.3	6.4	6.2
Moderately Gifted	6.1	6.5	6.7	5.8	5.4
Excess Grade Equivalent Difference	1.2	2.4**	1.6	0.6	0.8
GRADE 5					
Highly Gifted	9.1	9.8	9.7	7.7	6.9
Moderately Gifted	8.8	8.1	9.0	7.4	6.9
Excess Grade Equivalent Difference	0.3	1.7**	0.7	0.3	0.0
GRADE 6					
Highly Gifted	10.6	10.0	10.4	9.6	9.0
Moderately Gifted	9.2	9.1	10.2	8.7	8.2
Excess Grade Equivalent Difference	1.4**	0.9**	0.2	0.9**	0.8**

**Excess grade equivalent significant at the .01 level
*Excess grade equivalent significant at the .05 level

The Total Language score on the Iowa Tests is the only area in which no significant differences were noted at any grade level. All other areas measured on the test showed significant differences in at least one grade level, with all areas except Language showing a significant difference at the sixth grade level.

The differences between the achievement scores of boys and girls appeared to decrease as the children progress through the elementary grades. The girls achieved better than did the boys in the earlier years of school, but these differences became negligible in the higher elementary grades.

Autobiographies

Autobiographies were obtained from each of the subjects in the study. The children were directed to write about themselves including:

I. When and where you were born.
II. About your parents, brothers, sisters, and friends.
III. Where you live now.
IV. What you like to do. (hobbies, sports, and other interests)
V. What you want to do in the future.
VI. Anything else about yourself.

Attempts to treat the autobiographies on any qualitative factors were unsuccessful, but it was possible to measure certain mechanical aspects of their writing. The data obtained from the autobiographies are reported in Table XIII.

The length of the opening or first sentence in which the child writes about his hobbies was used in measuring sentence length. The number of words in each sentence was counted and a mean sentence length for each of the four groups in the study was obtained. There were only slight differences, which were insignificant, between the sentence length of the highly gifted and the moderately gifted subjects: however, these differences did favor the higher group. The average sentence length was between about ten and eleven words.

The number of adjectives, adverbs and prepositional phrases used in the paragraph discussing hobbies were then counted for each subject and the mean number obtained for each of the groups. Between two and three adjectives were used, with the highly gifted boys using the most and the moderately gifted girls using the fewest. The mean number of adverbs used ranged from .97 for the moderately gifted boys to 1.7 for the highly gifted boys. Approximately 1.5 prepositional phrases were used by each of the four groups.

Table XIII

MEAN SCORES ON MECHANICAL ASPECTS OF WRITING

	HIGH BOYS	MODERATE BOYS	HIGH GIRLS	MODERATE GIRLS
Sentence Length	11.00	10.20	10.32	9.97
Adjectives	3.12	2.30	2.35	2.08
Adverbs	1.74	.97	1.24	1.47
Prepositional Phrases	1.55	1.51	1.59	1.76
Word Difficulty Level	5.79	4.90	5.09	5.31

The three hardest words in the paragraph on hobbies were obtained and, using Thorndike and Lorge's *Teacher's Word Book of 30,000 Words,* the mean level of word difficulty was determined. The highly gifted boys used the highest level of words, while the moderately gifted boys used the least difficult level of words.

There were no significant differences between the sex-I.Q. groups nor between the total highly gifted group and total moderately gifted group.

Vocational Interests

Information concerning the occupational choices of the subjects was obtained from the children on their autobiographies and from the parents of the children on the home information record. It must be noted that these children are still very young, the oldest being only in the sixth grade, but the evidence clearly indicates that even though they may not have actually decided upon the vocation which they may be expected to follow, they have done a considerable amount of vocational planning.

From the autobiographies it was determined that the boys, both highly gifted and moderately gifted, had chosen 17 different occupations in which they thought they were interested. Both highly gifted and moderately gifted girls chose 12 different occupations. Even though there was little agreement as to vocational preference, diversity of interest was very apparent. Girls, both in the moderate and high groups, chose teaching first and medical related professions (nurse, doctor, etc.) next. Boys chose science in the greatest numbers and medical related positions next.

Classification of the vocational interests of the children as reported by their parents indicated that about 30 per cent of the boys (both moderate and high groups) had no specific vocational interest, but that only 20 per cent of the high group of girls and about 40 per cent of the moderate group of girls had no specific vocational interest. Once again there is a clear indication of the difference in the two groups of girls, with less or no difference in the two groups of boys. Virtually all of the children who had an interest, had one in the professional or managerial category.

Creative Thinking Abilities

Two tests from the Minnesota Battery of Tests of Creative Thinking (Torrance, 1962) were administered to each of the 40 children when they were interviewed. The Ask-and-Guess Test and the Test of Imagination were then scored according to the manual (Yamamoto, 1962a) and five subscores, Fluency, Adequacy, Flexibility, Originality, and Elaboration, were derived. Additionally, a Total Creativity score was obtained as the unweighted sum of these subscores. For information on validity and reliability of these tests, readers are referred to Torrance (1962) and Yamamoto (1962b).

As the first step of analysis, correlation coefficients between I.Q. and creativity scores were calculated within each subject group and the results are presented in Table XIV.

It is seen from Table XIV that none of the coefficients is statistically significant, while their size is in agreement with the generalization that correlation between measures of intelligence and those of creative thinking abilities are low (.2 — .4) among the general population and almost negligible and even negative among selected, high-ability subjects (Taylor and Holland, 1962; Yamamoto, 1961). Such a low correlation is apparently not an artifact of the restricted range of scores involved (MacKinnon, 1962).

Although there seems to be a tendency for the moderately gifted group to reveal a slightly higher (negative) correlation than that shown by the highly gifted group, none of the group differences is statistically significant.

Next, a point-biserial correlation coefficient was computed for the two groups, highly and moderately gifted, on each of the five creativity subscores and on the total. The results are shown in Table XV.

It is observed from Table XV that, on all but one of the creativity scores derived, the point-biserial correlation was low but statistically significant, indicating some association between the two variables, I.Q. and creativity.

In view of the suggested association, a further analysis of the results was made by application of 2 (I.Q. level) x 2 (sex) analysis of variance technique. Table XVI presents mean scores for various subgroups and Table XVII the results of analysis.

Table XIV

PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN I.Q. AND MEASURES OF CREATIVE THINKING

GROUP	N	MEASURES OF CREATIVE THINKING ABILITIES					
		Fluency	Adequacy	Flexibility	Originality	Elaboration	Total
High I.Q.	20	— .15	— .06	— .07	— .08	— .03	— .10
Low I.Q.	20	— .31	— .34	— .33	— .21	— .31	— .26
$Z_{(H-L)}$		.16	.30	.27	— .29	.29	.16
$Sd_{(z)}$		.34	.34	.34	.34	.34	.34
z		.47	.88	.79	— .85	.85	.47

It is seen from Tables XVI and XVII that between-group variance is significant at or beyond the .05 level on four of the five subscores and for the total score. The results are consistent with those given in Table XIV and Adequacy is the only subscore on which the groups did not show any significant difference. On all other scores, the highly gifted group obtained a significantly higher mean score than that of the moderately gifted group. Sex differences observed in Table XVI, on the other hand, were statistically non-significant on all the scores.

Table XV

POINT-BISERIAL CORRELATION COEFFICIENTS FOR TWO I.Q. GROUPS ON SIX CREATIVITY SCORES

SCORE	rpb	t	SIGNIFICANCE
Fluency	.38	2.516	$p < .05$
Adequacy	.26	1.632	ns[1]
Flexibility	.43	2.895	$p < .01$
Originality	.46	3.193	$p < .01$
Elaboration	.38	2.539	$p < .05$
Total	.43	2.928	$p < .01$

[1] "ns" stands for "statistically non-significant."

Table XVI

MEAN CREATIVITY SCORES FOR I.Q. AND SEX SUBGROUPS

	HIGH I.Q.			LOW I.Q.		
SCORE	BOY	GIRL	TOTAL	BOY	GIRL	TOTAL
Fluency	59.0	62.0	60.5	51.8	44.0	47.9
Adequacy	16.7	16.1	16.4	14.7	12.3	13.5
Flexibility	35.8	39.3	37.6	30.2	28.7	29.5
Originality	68.4	75.7	72.1	59.1	47.6	53.4
Elaboration	38.3	46.1	42.2	37.1	31.0	34.1
Total	218.2	239.2	228.7	192.9	163.6	178.3

Table XVII
ANALYSIS OF VARIANCE OF CREATIVITY SCORES

SCORE	SOURCE OF VARIATION	d.f.	MEAN SQUARE	F
Fluency	Group	1	1587.6	6.2*
	Sex	1	57.6	<1
	Group x Sex	1	291.6	1.2
	Error	36	254.4	
Adequacy	Group	1	84.1	2.6
	Sex	1	22.5	<1
	Group x Sex	1	8.1	<1
	Error	36	32.5	
Flexibility	Group	1	656.1	8.2**
	Sex	1	10.0	<1
	Group x Sex	1	62.5	<1
	Error	36	80.5	
Originality	Group	1	3496.9	10.4**
	Sex	1	44.1	<1
	Group x Sex	1	883.6	2.6
	Error	36	336.4	
Elaboration	Group	1	639.3	6.7*
	Sex	1	7.3	<1
	Group x Sex	1	507.9	5.4*
	Error	36	94.8	
Total	Group	1	25452.1	8.6**
	Sex	1	172.3	<1
	Group x Sex	1	6325.1	2.1
	Error	36	2953.0	

*$p < .05$
**$p < .01$

There was significant group x sex interaction on Elaboration. Figure 2 reveals that the interaction effects are mainly from among girls and not from among boys. High I.Q. girls scored much higher on Elaboration than did lower I.Q. girls, thus causing the significant group effects.

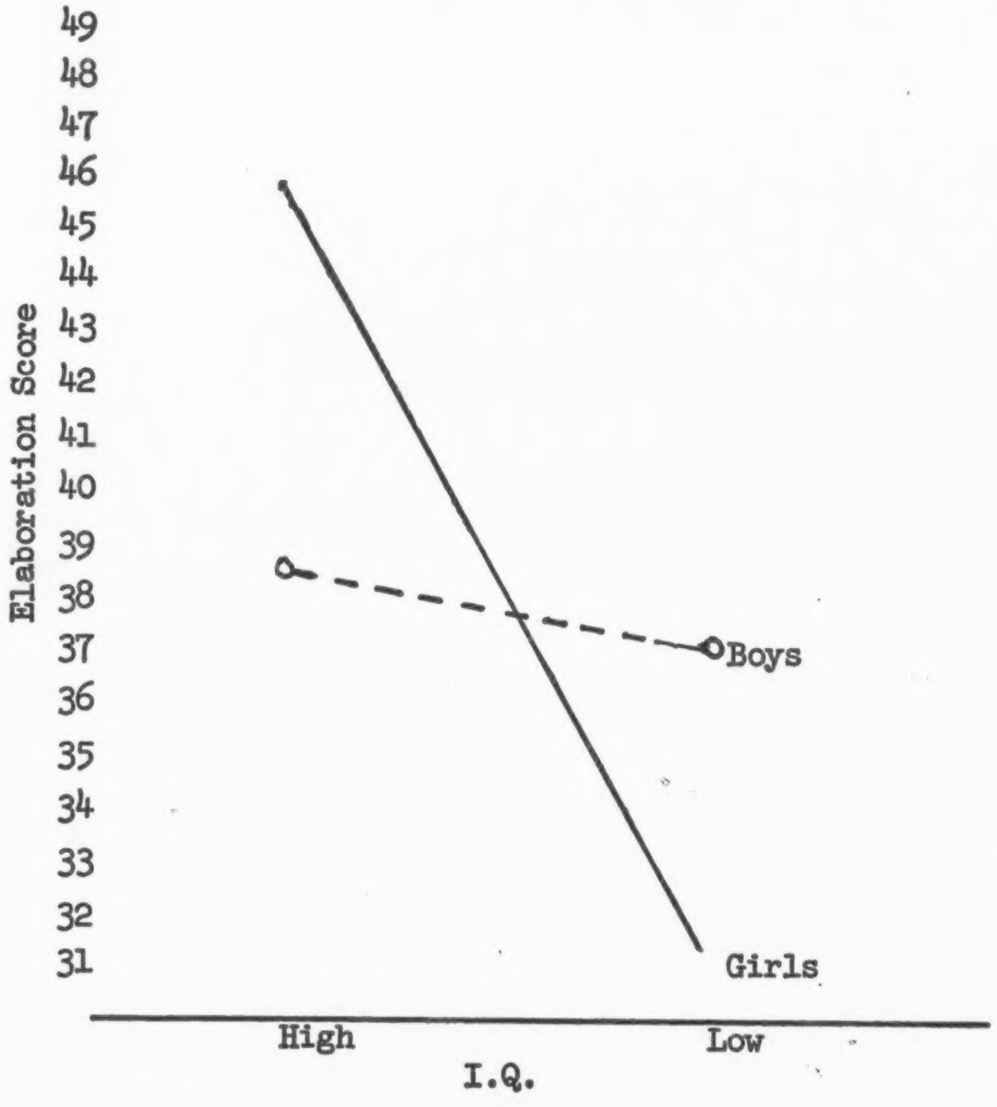
Special Talents or Skills and Limitations

Information concerning talents or skills of the children in this study was obtained from the home information report and from the students in the interview group. Because the group consisted entirely of children of high I.Q., it is not unusual to expect a wide variety of talents and skills. Noteworthy, from among a wide-spread list of abilities, however, is that all of the highly gifted girls (100 per cent) in the interview group play some musical instrument, while only half (50 per cent) of the moderately gifted girls play a musical instrument. Only 20 per cent of the gifted boys, in both the moderately and the highly gifted interview groups, play a musical instrument.

Information concerning special abilities in school revealed that 45.2 per cent of the highly gifted boys had special ability in reading, while only 12.9 per cent of the moderately gifted boys had special ability in

Figure 2

GROUP x SEX INTERACTION ON ELABORATION SCORE



reading. Of the highly gifted girls, 23.5 per cent listed reading and of the moderately gifted girls, 14.7 per cent listed reading. The others were spread over such areas as writing, art, and science.

From the personal interview group, most of the limitations stated by females were physical. No such clear pattern was evident from the boys' responses. Twice as many of the moderately gifted boys as any of the other three groups stated no limitations.

In answer to the question on the home information report on special disabilities in school work, better than three-fourths of the parents' reports stated that their child had no special disability in school work. The remainder either did not reply or were distributed in insignificant numbers between reading and writing.

Group Intelligence Testing

All of the subjects were selected on the basis of their individual I.Q. test score, in most cases this being the first time the student had been administered an individual test. Practically all of the subjects had been administered some type of group I.Q. test.

The lowest group I.Q. test scores which were entered on the school records were obtained for all of the subjects. These data are reported

Table XVIII

LOWEST GROUP I.Q. SCORES

I.Q.	HIGH MALE	LOW MALE	HIGH FEMALE	LOW FEMALE
109 and below	4	6.	0	3
110-114	6	1	2	2
115-119	6	4	4	8
120-124	7	4	4	7
125-129	6	2	2	3
130-134	3	8	8	11
135-139	5	7	7	7
140-144	7	2	2	3
145-149	7	3	4	1
150-154	3	1	0	1
155-159	2	1	1	1
160-164	1	0	0	0

in Table XVIII. The alarmingly large number of each of the four groups who had scored on a group test below the lower cut-off point clearly indicates the concern which must be expressed for the use of group tests to identify gifted children. Even the highly gifted group, who scored 148 I.Q. or above had many instances in which the child had scored on a group test below 120 I.Q., or a minimum of 28 points lower than his score on the individual test.

Taking the most recent group I.Q. score provides evidence less dramatic, but equally disturbing, concerning the use of group I.Q. tests to identify gifted children. About six per cent of the total matched population would not have been included in this study had group I.Q. tests been used because they failed to score above the 120 cut-off point. Had group I.Q. test results been depended upon, the highly gifted group would have contained only 27 per cent of the same population.

Mental Qualities

The ratings by parents of their children's mental qualities are reported in Table XIX. As would be expected, ratings were high on "general intelligence" and "success in school work" for all groups, but more frequently reported to be high for the highly gifted group. In "initiative and self-direction" the data indicates more "high" ratings for the highly gifted group, particularly for the girls. Ratings on creativity do not agree with scores reported previously, for the highly gifted group was not reported "high" in creativity more often than the moderate group. Lack of agreement as to what is creativity probably accounts for this difference. As expected, fewer subjects were rated "high" in "mechanical proficiency" than in any other area noted. There was clear indication from the ratings of "oral expression" that the highly gifted group was favored over the moderately gifted group.

Summary

It is readily apparent that the subjects in the present study do not differ from the subjects in other studies of the gifted. Their academic achievement is commensurate with their ability, they learn to read early and they make rapid progress in school. There is indication that for the subjects in this study the highly gifted group scores higher on measures of creativity than the moderately gifted group. Group I.Q. tests, while measuring partially the abilities of many of the gifted children, do exclude some of the children of very high ability.

Table XIX

PARENTS' RATINGS OF CHILD ON MENTAL QUALITIES

RATINGS		TRAITS											
		GENERAL INTELLIGENCE		INITIATIVE AND SELF-DIRECTION		CREATIVE ABILITY		MECHANICAL PROFICIENCY		ORAL EXPRESSION		SUCCESS IN SCHOOL WORK	
		Number	%age	Number	%age	Number	%age	Number	%age	Number	%age	Number	%age
High Boys	High	27	87.1	18	58.1	7	22.6	11	35.5	22	71.0	26	83.9
	Average	4	12.9	12	38.7	18	58.1	15	48.4	9	29.0	5	16.1
	Below Average	0	0	0	0	5	16.1	5	16.1	0	0	0	0
	Uncertain	0	0	1	3.2	1	3.2	0	0	0	0	0	0
Low Boys	High	21	67.7	16	51.6	10	32.3	9	29.0	16	51.6	23	74.2
	Average	9	29.0	14	45.2	16	51.6	17	54.8	13	41.9	6	19.4
	Below Average	0	0	0	0	4	12.9	4	12.9	1	3.2	1	3.2
	Uncertain	0	0	0	0	0	0	0	0	0	0	0	0
High Girls	High	30	88.2	24	70.6	14	41.2	8	23.5	24	70.6	31	91.2
	Average	2	5.9	9	26.5	18	52.9	23	67.6	7	20.6	1	2.9
	Below Average	1	2.9	0	0	1	2.9	0	0	2	5.9	1	2.9
	Uncertain	0	0	0	0	1	2.9	1	2.9	0	0	0	0
Low Girls	High	25	73.5	19	55.9	16	47.1	7	20.6	17	50.0	25	73.5
	Average	9	26.5	15	44.1	18	52.9	23	67.6	17	50.0	9	26.5
	Below Average	0	0	0	0	0	0	3	8.8	0	0	0	0
	Uncertain	0	0	0	0	0	0	1	2.9	0	0	0	0

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Chapter V

PHYSICAL DEVELOPMENT

The importance of studying the physical development of children is often minimized by the difficulties of collecting information. In retrospect, parents are inclined to forget ailments of their children which seemed to be minor and, particularly in larger families, to forget such factors as age of walking and talking. Recognizing these limitations, the investigators considered such information to be valuable enough to obtain as much as possible. Parental reports provided the greatest part of the information. School records provided additional information, but this was meager other than the attendance record. Additional information was obtained from the children in the interview sample.

Prenatal Development

The prenatal development and birth of the subjects was reported as "normal" by about 80 per cent of parents of boys in both the highly and moderately gifted groups. Better than 90 per cent of the parents of girls reported "normal" prenatal development and birth.

Age of Walking and Talking

Reports on age of walking and talking are subject to great error due to the inability to remember, as well as to the lack of any precise measurement of exactly at which moment the child walks unaided or talks intelligibly. The range of beginning walking was reported from before eight months to after 16 months, with the mean age being 11 months for the moderately gifted boys and the highly gifted girls, and 12 months for the highly gifted boys and the moderately gifted girls. This difference is clearly insignificant.

The age of talking was reported to be from before 12 months to over 20 months. The mean age of beginning talking for the highly and moderately gifted boys was 17 months, while for the highly gifted girls it was 16 months and for the moderately gifted girls it was 15 months. The differences are not significant, although the expected tendency for girls to begin talking before boys was supported.

Parents' Ratings of Physical Traits

The parents of each of the subjects were asked to rate their child on a four point scale (High, Average, Below Average, Uncertain) on (1)

Table XX
PARENTS' RATINGS OF CHILD ON PHYSICAL TRAITS

RATINGS		TRAITS									
		GENERAL HEALTH		IMMUNITY TO COLDS AND DISEASE		SENSORY DEVELOPMENT		MUSCULAR COORDINATION AND STRENGTH		REGULAR AND UNDISTURBED SLEEP HABITS	
		Number	%age	Number	%age	Number	%age	Number	%age	Number	%age
High Boys	High	15	48.4	8	25.8	14	45.2	8	25.8	12	38.9
	Average	16	51.6	23	74.2	17	54.8	22	71.0	19	61.3
	Below Average	0	0	0	0	0	0	1	3.2	0	0
	Uncertain	0	0	0	0	0	0	0	0	0	0
Low Boys	High	17	54.8	8	25.8	14	45.2	10	32.3	17	54.8
	Average	13	41.9	21	67.7	15	48.4	17	54.8	12	38.7
	Below Average	0	0	1	3.2	1	3.2	3	9.7	1	3.2
	Uncertain	1	3.2	0	0	0	0	0	0	0	0
High Girls	High	20	58.8	9	26.5	12	35.3	11	32.4	19	55.9
	Average	13	38.2	21	61.8	19	55.9	22	64.7	13	38.2
	Below Average	0	0	1	2.9	2	5.9	0	0	1	2.9
	Uncertain	1	2.9	0	0	0	0	0	0	0	0
Low Girls	High	17	50	7	20.6	15	44.1	13	38.2	19	55.9
	Average	17	50	27	79.4	17	50	18	52.9	14	41.2
	Below Average	0	0	0	0	0	0	2	5.9	1	2.9
	Uncertain	0	0	0	0	0	0	0	0	0	0

general health, (2) immunity to colds and disease, (3) sensory development, (4) muscular coordination and strength, and (5) regular and undisturbed sleep habits. The results are reported in Table XX.

No significant differences were noted in the parents' reports on the general health of the subjects in each of the four groups. About half of the subjects in each of the groups were rated "high" in general health, and the remaining half were rated as "average." More of the highly gifted girls were rated high in general health than was any other group.

There appeared to be no particular resistance to colds on the part of the gifted subjects. About one-fourth of each group was rated as "high" in resistance to colds and disease, with the remaining rated about "average." There appear to be no significant differences on ratings of sensory development.

Muscular coordination and strength ratings showed fewer of the high ability boys to be rated "high" than the other three groups. More of the moderately gifted boys and the moderately gifted girls respectively were rated "high" in this area than were the highly gifted boys and girls. Since this is a topic on which there is frequent disagreement by the lay public with research reports on the superiority of gifted children in muscular coordination and strength, the data suggest that the more highly gifted are perhaps not so superior as the moderately gifted group.

Ratings of sleep habits indicated no difference between any of the groups, except the highly gifted boys, in which case a sizeable number of parents reported only "average" sleep habits. This differed greatly from the pattern reported by parents of highly gifted girls and moderately gifted boys and girls.

School Absences

The number of absences was taken from the school records as an indication of the health status of the child. Both the moderately and the highly gifted boys averaged 9.5 days absence for each of the years they had been in school. The girls averaged slightly fewer absences. The highly gifted girls averaged 7.6 days per year and the moderately gifted girls averaged 8.7 days per year. For each of the groups, the first grade was the time when the largest number of absences occurred.

Strengths and Weaknesses

The 40 children in the interview sample were asked their strengths and weaknesses. Fourteen of the 40 identified athletics as an area of particular weakness, while 12 identified athletics as an area of particular strength. More of the girls, both moderately and highly gifted, (N=10) identified athletics as an area of weakness than did boys (N=4). The number identifying athletics as an area of strength differed little between the highly and moderately gifted groups.

Socio-Economic Factor and Physical Development

Those children in the interview sample whose parents were in professional and managerial occupations were grouped against those children whose parents were in other categories. Using this classification, there was no difference in the reported age of learning to talk and in the reported general health. The concern that perhaps the reported superiority of gifted children in physical areas might be an artifact of high socio-economic background was not supported in this instance in which occupational classification was used as the distinguishing factor.

Summary

Reporting the physical development of children from statements of parents, in retrospect, presents many problems. Memory of precise times of beginning to walk and to talk are, at best, only approximations. The resulting lack of differences found between the two groups, while this might have been expected, is probably due to the method by which the data were obtained. This is not meant to minimize the value of information on physical development, but, rather to point out the caution with which such data must be interpreted.

Chapter VI

THE ADJUSTMENT OF MODERATELY AND HIGHLY GIFTED CHILDREN

The measurement of adjustment cannot be based upon any single measure and, indeed, the problems of measuring the adjustment of gifted children are doubly increased. Standardized measures of personality generally assume that the person responding does not know exactly what factor is being measured, and will therefore not see any reasons for false statements. This assumption is less true for gifted individuals than for average children. In addition to the gifted child's superiority in knowing what is expected, the child is also confronted with the dilemma of deciding if the adult wants the answer in the way the child really feels, or if the adult wants the answer in the way the child thinks he should feel. Then there is the additional problem of whether or not gifted children should be expected to adjust in the same way as average children, or have their adjustment measured against the same standards as that of average children. This dilemma is either unanswered or, if the mode of operation is correct, it has been answered in expecting all children to adjust in the same manner as the "average," under the false assumption that though children may differ in ability, there is no justification for behavior differences.

A variety of means has been used to measure the adjustment of the children in the present study. A standardized personality test was administered to each child, and teachers were asked to name the children in their classes who were best described by each of ten statements. In addition to this, reports from parents on all of the subjects were collected. Forty children were interviewed and asked their three wishes. A non-standardized "Self-Concept Scale" was also administered to the children in the interview sample.

The IPAT Children's Personality Questionnaire

In stating the great need for "trustworthy personality measures of children," Porter and Cattell emphasize various reasons. Dominant among these reasons is the obvious need for better understanding of a child, if his full potentiality is to be realized. Included is a reason frequently overlooked; the natural inclination of teachers to emphasize those areas where results can be measured. Porter and Cattell state that "it is commonplace of education that the teacher's attention is inclined to concentrate on those matters, notably academic achievement, where results *can* be measured." Perhaps even more important in programs for gifted children than in programs for any other particular group is the need for means of measuring results of the program other than academic achievement.

The Institute for Personality and Ability Testing, (IPAT), Children's Personality Questionnaire, (The CPQ), is distinctive in a number of ways. These particular qualities made it most suitable as a group measurement of personality for the children in this study. The test contains 70 items, with five items for each of the 14 dimensions measured by the test as listed below (popular title in parentheses):

1. Schizothymia-versus-Cyclothymia
   (Stiff, Aloof-versus-Warm, Sociable)
2. Mental Defect-versus-General Intelligence
   (Less Intelligent-versus-More Intelligent)
3. Ego Weakness-versus-Ego Strength
   (Emotionally Unstable-versus-Emotionally Mature)
4. Placidity of Temperament-versus-Excitability
   (Phlegmatic-versus-Excitable)
5. Submissiveness-versus-Dominance
   (Submissive-versus-Dominant)
6. Disurgency-versus-Surgency
   (Serious-versus-Happy-Go-Lucky)
7. Super Ego Weakness-versus-Super Ego Strength
   (Frivolous-versus-Persevering)
8. Threctia-versus-Parmia
   (Shy-versus-Venturesome)
9. Harria-versus-Premsia
   (Tough Minded-versus-Tender Minded)
10. Zeppia-versus-Coasthenia
    (Vigorous-versus-Internally Restrained)
11. Naivete-versus-Shrewdness
    (Simple-versus-Shrewd)
12. Unperturbed Adequacy-versus-Guilt Proneness
    (Complacent-versus-Self Reproaching)
13. Weak Self-Sentiment-versus-Strong Self-Sentiment
    (Lax-versus-Self Controlled)
14. Low Ergic Tension-versus-High Ergic Tension
    (Composed, Relaxed-versus-Driven, Tense)

Procedures:

The IPAT Children's Personality Questionnaire was administered by intern school psychologists to the 130 children in the study. In most instances the test was administered individually, although in some cases it was administered to a small group. Since all of the children were relatively good readers, it was not necessary to read the test to any of the subjects. Although no time limits are directed in the Manual, it is estimated that the test can be administered in a 50 minute period. The children in this study, for the most part, took far less time than the 50 minute period mentioned.

Treatment of Data:

The data were treated using Fisher's "t" test and the Cochran Cox "t" test where the Fisher "t" test was not applicable in comparing the sub-groups on each of the 14 factors on the IPAT, CPQ. Using 65 matched pairs of moderately and highly gifted elementary children, 31 matched pairs of boys and 34 matched pairs of girls, the following comparisons were made on each of the 14 factors of the IPAT, CPQ:

1. Total moderately gifted group versus total highly gifted group.
2. Moderately gifted girls versus highly gifted girls.
3. Moderately gifted boys versus highly gifted boys.
4. Boys (moderately and highly gifted) versus girls (moderately and highly gifted).

Results:

The statistical comparisons of the data are presented in Table XXI. Comparing the total highly gifted group with the total moderately gifted group on 14 factors of personality yielded only one difference, Disurgency-versus-Surgency, which was significant (at the .01 level). The highly gifted group was found to be significantly higher in the direction of Surgency, which is defined as "happy-go-lucky, talkative, cheerful, serene, frank, expressive, mercurial, quick and alert." It must be noted that both the moderately gifted and the highly gifted tended in the Surgency direction, with the highly gifted group doing so to a significantly greater extent.

Comparing highly gifted boys with moderately gifted boys on all 14 factors yielded no significant differences. The comparison of highly gifted girls with moderately gifted girls gave similar results, with the exception that the highly gifted girls were significantly more surgent than the moderate girls. The comparison between boys and girls yielded significant differences at the .01 level on two factors, and on another factor at the .05 level. On Submissiveness-*versus*-Dominance the boys appeared significantly more dominant, even with the adjusted scores purported to allow for sex differences, and on Harria-*versus*-Premsia (Tough, Realistic-*versus*-Esthetically Sensitive) the girls were significantly more Tender Minded. On Schizothymia-*versus*-Cyclothymia (Stiff, Aloof-*versus*-Warm, Sociable), a difference significant at the .05 level was obtained, with the girls tending significantly more toward Cyclothymia than the boys. The Anxiety-*versus*-Adjustment score, obtained by combining and weighting certain of the 14 sub-test scores,

Table XXI

FISHER'S "t" VALUES FOR COMPARISONS OF CPQ PERFORMANCE

FACTOR	HIGH GIRLS vs MODERATE GIRLS (d.f.=66)	HIGH BOYS vs MODERATE BOYS (d.f.=60)	TOTAL BOYS vs TOTAL GIRLS (d.f.=128)	TOTAL HIGH GROUP vs TOTAL MODERATE GROUP (d.f.=128)
A	1.66	0.92	2.29*	0.45
B	1.37	0.70	1.63	1.48
C	1.23	1.62	0.78	0.36
D	1.75	0.62	0.78	1.47
E	1.47	0.05	3.25**	0.91
F	2.58*	1.55	0.45	2.89**
G	0.36	0.15	0.62	1.55
H	0.48	1.40	0.36	1.64
I	1.40	0.51	2.85**	1.80
J	0.66	0.14	0.29	0.52
N	0.62	0.83	1.50	0.99
O	0.47	0.78	0.07	0.24
Q_3	0.80	0.34	1.82	0.86
Q_4	1.92	0.62	1.65	0.90

* Significant at the .05 level of significance.
** Significant at the .01 level of significance.

reveals only slight differences between the total highly gifted group and the total moderately gifted group, with the slight difference tending toward more Anxiety for the high group. On the Extraversion-*versus*-Introversion scale obtained by combining and weighting certain other of the 14 sub-test scores, only slight differences were found between the highly gifted group and the moderately gifted group with the slight difference tending toward Extraversion for the high group.

Both the highly gifted and the moderately gifted groups were well adjusted. The differences obtained on several of the 14 sub-tests reflects only more of a tendency toward one direction, but definitely does not imply that either group is maladjusted.

Self-Concept

One's attitude toward himself, his self-concept, is perhaps the factor of greatest importance in determining the future achievements and adjustments of any individual. Obviously, with gifted children who have the inherent mental ability for greatness, self-concept is an even more important factor than it would be with average children. If it were possible to measure the self-concept of gifted children, valuable information would be obtained. Even with the non-availability of any measuring instrument, it was believed to be sufficiently important to at least make an effort to measure some factors of the self-concept of the subjects in the study.

There is obviously no agreement either as to what self-concept actually consists of or even the outcomes of good or poor self-concept. The abundance of literature on self-concept has been severely criticized on the lack of agreement as to what constitutes self-concept and the methods used attempting to measure it. The present approach was an attempt to measure two factors thought to be part of one's total self-concept. Part I attempted to measure the subject's concept of his own ability to achieve. Part II attempted to measure the subject's concept of his own characteristics and personality traits generally associated with security.

Statistical Treatment:

Split-half reliability coefficients were computed for both parts of the instrument using the Spearman Brown formula. The coefficient obtained for Part I of the test was a positive .88, and the coefficient for Part II was a positive .79.

Item correlations for Part I were computed and found to be insufficient for proceeding further along these lines. Pearson Product Moment Correlation Coefficients were computed for five areas. Items 1 and 6 were measures of one's concept of his ability to achieve in academic areas (i.e. reading and arithmetic). A positive correlation of .20 was obtained. Items 2 and 7 were measures of one's concept of his ability to achieve in the future (i.e. when in high school and in college). A positive correlation of .67 was obtained. The third area was a measure of one's concept of his basic intelligence. A positive correlation of .61 was obtained. The fourth area was a measure of one's ability to achieve when he tried. Positive correlation of .86 was obtained. The fifth area measured one's concept of his learning ability. A positive correlation of .56 was obtained. Item correlations were not computed for Part II of the instrument because the items were not constructed to be equivalent.

Point biserial correlation coefficients were computed for Parts I and II of the instrument. The highly gifted group had the better performance on the first part of the instrument and the moderately gifted group had the better performance on the second part. Neither of these was significant.

Using the Fisher "t" test of significance on Part I of the instrument, differences at the .05 level of significance showed that highly gifted boys had a better "self-concept" than the moderately gifted boys. Also, on Part I, the moderately gifted girls had a significantly better "self-concept" than the moderately gifted boys. The difference between the total highly gifted group and the total moderately gifted group was not significant.

On Part II of the instrument, a difference at the .05 level of significance showed that the highly gifted boys had a better "self-concept" performance than the highly gifted girls. There was no significant difference between the total groups.

The highly gifted boys had better performances on both parts of the instrument than any other sub-group. Reversed results were obtained from the two parts of the instrument when making comparisons between the moderately gifted girls and moderately gifted boys and between the highly gifted girls and moderately gifted boys. The Fisher's "t" values and the direction of performance difference are given in Table XXII.

Table XXII

FISHER'S "t" VALUES FOR SELF-CONCEPT DIFFERENCES BETWEEN GROUPS ON BOTH PARTS OF SELF-CONCEPT INSTRUMENT

GROUP COMPARISONS	FIRST PART "t" VALUE	FIRST PART DIRECTION	SECOND PART "t" VALUE	SECOND PART DIRECTION
High Boys **vs** **Moderate Boys**	2.81*	+	.30	+
High Girls **vs** **Moderate Girls**	.65	+	1.27	+
Moderate Girls **vs** **Moderate Boys**	2.12*	+	1.04	—
High Boys **vs** **High Girls**	1.34	+	2.39*	+
High Girls **vs** **Moderate Boys**	.98	+	2.04	—
High Boys **vs** **Moderate Girls**	.88	+	1.47	+

+ Performance better for the first listed group.
— Performance better for the second listed group.
* Significant at .05 level of significance.

Interpretation:

The instrument developed must be recognized only as a beginning attempt to measure certain factors of self-concept. It was apparent that Parts I and II did not measure the same factors. Highly gifted boys had a better self-concept of their ability to achieve than did moderately gifted boys, and moderately gifted girls had a better concept of their ability to achieve than did moderately gifted boys. The absence of any agreement of the subjects on their concept of their ability to achieve on a reading test and on an arithmetic test would indicate either greatly less ability in one or the other of the areas, which was not indicated by the achievement test results reported in Chapter IV, or that their concept of their ability to achieve in different areas is not clearly established.

The instrument is not refined enough for further use. The greatest value is apparently in Part I dealing with the individual's concept of his ability to achieve, but this needs greater refinement. Attempts to measure self-concept, however, must continue if an increased understanding of children is to be obtained.

Behavior Irregularities

The parents were asked to state any behavior irregularities noted about their children. Of the total group of 130 children, only in 24 cases was a notation made. There was no particular difference in the number of parents who listed behavior irregularities, or even the type of problems listed. Sibling rivalry was the most frequently mentioned. It might be noted in the lists below that more of the highly gifted group had behavior irregularities listed.

Highly Gifted Boys

1. Frustration due to physical weakness
2. Bed wetting
3. Nightmares, tantrums
4. "Baby" of the family
5. Stormy disposition
6. Child bored with mother due to father working out of town
7. Doesn't cooperate about bathing and going to bed
8. Short temper and sibling rivalry

Moderately Gifted Boys

1. Moves slowly
2. Frustrated when doesn't attain perfection
3. Very nervous. Evidence of sibling rivalry
4. Behaves at school, stubborn at home
5. Loses temper
6. Grouchy

Highly Gifted Girls

1. Sibling rivalry
2. Quick to anger, sibling rivalry
3. Impatient
4. Difficult to accept suggestions
5. Talkative and over-enthusiastic
6. Willful child

Moderately Gifted Girls

1. Tires easily. Unresponsive to household routine
2. Sensitive to adverse criticism
3. Disturbed by mother working
4. Sibling rivalry

Children's Wishes

Asking children for their three wishes has long been used by teachers and school psychologists as a means to better understand children's behavior. The wishes are used only as an indication of the child's desires, and are not intended necessarily to divulge the inner-most secrets of the child's life. The beauty of the instrument is its simplicity, and the enthusiasm with which children frequently undertake to discover their own three wishes is perhaps the best argument in favor of the procedure itself.

The 40 children in the interview sample were asked for their three wishes. All of the children gave at least one wish, and most gave three. Several could think of only one wish, and several others felt that two wishes were absolutely all anyone could possibly hope for. No particular pressure was placed upon the children to give more wishes than they themselves volunteered.

Categorizing children's wishes posed special problems, for the wishes often were unique. An attempt was made, however, and is reported in Table XXIII.

The small number of subjects in the interview sample allowed for seemingly exaggerated differences in the two groups. The moderately gifted group, with 12 of their wishes, as against only two in the highly gifted group, were "outer-directed." The two groups were quite similar in their materialistic wishes, but the highly gifted group stated more "self-ambition" wishes, and more "behavioristic" type wishes.

Teacher Selection of "Who Is It?"

A socio-metric instrument entitled, "Who Is It?" was given to the teacher of each classroom in which one of the 130 subjects in the final sample was enrolled. The teacher was asked to identify the children who were best described by each of ten statements. The teacher was given no direction either to include or exclude the children in the study, or to list ten different children or to repeat some of the names if the description best fits the child. The names of the subjects were then listed in each of the four categories (highly gifted boys, highly gifted girls, moderately gifted boys, and moderately gifted girls) and the rating of each teacher in whose classroom a gifted subject was enrolled was checked to see if the child in the study was listed on any of the ten categories and, if so, on which items. The data obtained are presented in Table XXIV.

Noteworthy is the fact that 25 per cent of the highly gifted group was not listed on any one of the ten categories. Remembering that each of these children had received I.Q. scores of 148 or above, it seems

Table XXIII

CATEGORIZATION OF "THREE WISHES" OF 40 GIFTED CHILDREN

CATEGORY	HIGHLY GIFTED (N=20) Number	HIGHLY GIFTED (N=20) %age	MODERATELY GIFTED (N=20) Number	MODERATELY GIFTED (N=20) %age
INNER-DIRECTED		(96.8)		(78.6)
A. Materialistic		(40.8)		(44.6)
1. Money	7	11.9	6	10.7
2. Clothes	1	1.7	1	1.8
3. Animals	7	11.9	6	10.7
4. Toys, other tangible objects	8	13.6	11	19.6
5. Sisters or brothers in wishes	1	1.7	1	1.8
B. Idealistic		(33.9)		(23.2)
1. Self-ambition	17	28.8	11	19.6
2. Education	3	5.1	2	3.6
C. Behavioristic		(22.1)		(10.4)
1. Travel	1	1.7	3	5.4
2. Fantasy ("fly," "Smart pills")	2	3.4	1	1.8
3. More wishes	7	11.9	1	1.8
4. Negativistic	3	5.1	1	1.8
OUTER-DIRECTED		(3.4)		(21.4)
A. Family welfare	1	1.7	4	7.1
B. World welfare	1	1.7	8	14.3

difficult to believe that so many of them could be left off the rating as the most intelligent, much less the nine other positive factors so often related with "brightness." An even greater percentage, about 37 per cent, of the moderately gifted were not listed on any of the ten factors. This would be an astounding figure if the real impact of it had not been depleted by the even more astounding absence of the highly gifted group from the ratings.

The "Who Is It?" blank contained the following ten questions:

1. Who is the most popular pupil in your class?
2. Who has the wildest ideas?
3. Who is the smartest?
4. Which pupil do you like best?

Table XXIV

TEACHER SELECTION OF "WHO IS IT?"

	HIGHLY GIFTED*				MODERATELY GIFTED*			
	BOYS		GIRLS		BOYS		GIRLS	
	Number	%age	Number	%age	Number	%age	Number	%age
None Listed	7	22.6	9	26.5	11	35.5	13	38.2
1. Who is the most popular pupil in your class?	3	9.7	0	0	4	12.9	1	2.9
2. Who has the wildest ideas?	3	9.7	2	5.9	2	6.5	2	5.9
3. Who is the smartest?	13	41.9	15	44.1	10	32.3	7	20.6
4. Which pupil do you like best?	0	0	1	2.9	0	0	0	0
5. Who is the most talented?	2	6.5	3	8.8	5	16.1	1	2.9
6. Who is the best leader?	5	16.1	4	11.8	3	9.7	1	2.9
7. Who is the most imaginative?	3	9.7	2	5.9	3	9.7	1	2.9
8. Who has the most academic potential?	15	48.4	17	50.0	7	22.6	11	32.4
9. Who is the most intelligent?	15	48.4	17	50.0	6	19.4	10	29.4
10. Who is the funniest?	1	3.2	0	0	2	6.5	0	0

* Percentages are calculated for each item discretely because of the possibility of any child being chosen in more than one category.

5. Who is the most talented?
6. Who is the best leader?
7. Who is the most imaginative?
8. Who has the most academic potential?
9. Who is the most intelligent?
10. Who is the funniest?

Parents' Ratings of the Child's Adjustment

Parents are not necessarily in the best position to rate the adjustment of their own children, but they are in a position to contribute valuable information toward an understanding of the child's behavior. Parents in the present study were asked to indicate the type of person with whom the child prefers to associate. No restriction was made on the number of types which might be marked, so the total includes more than the total number of children in the study. The number of categories marked averaged slightly more than two for each subject.

Comparing the number of parents who marked each category reveals an almost identical number for the moderately and highly gifted groups. Fifty-four parents of highly gifted children and 48 of moderately gifted children indicated that their child preferred children of his own age. Thirteen of the parents of highly gifted and 16 of the parents of moderately gifted indicated their child preferred younger children. Thirty-four and 35 of the parents of moderately and highly gifted children, respectively, indicated that their child preferred older children. About the same number marked that their children preferred association with their parents, and only in the number marking "other adults" was there any differences of any proportional size. Fifteen parents of highly gifted marked this category, while only seven of the parents of moderately gifted so indicated. The small number from both groups makes this not particularly significant.

Parents were asked, "How well does your child get along with other children and teachers?" Almost 97 per cent of the parents of highly gifted children marked "well," while about 91 per cent of the parents of moderately gifted children marked "well." This clearly indicates that both groups get along well with other children and teachers, with the highly gifted group perhaps getting along slightly better. When the children whose fathers were in professional and managerial occupations, irrespective of the I.Q. scores of the children, were compared with those children whose fathers were not in professional and managerial occupations, almost identical results were obtained as when the grouping had been done on the basis of I.Q. This is another indication of the slight superiority of higher socio-economic groups in adjustment measures, not

Table XXV

PARENTS' RATINGS OF CHILD ON SOCIAL TRAITS AND ATTITUDES

		TRAITS											
RATINGS		SOCIALLY ACTIVE IN SCHOOL		POPULAR AT SCHOOL		ACCEPTS RESPONSI-BILITY		INTERESTED IN SCHOOL WORK		APPRECIATES BEAUTY AND HAS GOOD TASTE		COOPERATIVE AND SHARES WELL	
		Number	%age	Number	%age	Number	%age	Number	%age	Number	%age	Number	%age
High Boys	High	10	32.3	8	25.8	15	48.4	24	77.4	12	38.7	12	38.7
	Average	19	61.3	21	67.7	14	45.2	5	16.1	18	58.1	18	58.1
	Below Average	0	0	0	0	2	6.5	2	6.5	0	0	1	3.2
	Uncertain	1	3.2	0	0	0	0	0	0	1	3.2	0	0
Low Boys	High	12	38.7	12	38.7	15	48.4	25	80.6	14	45.2	13	41.9
	Average	17	54.8	15	48.4	15	48.4	4	12.9	16	51.6	16	51.6
	Below Average	1	3.2	2	6.5	0	0	1	3.2	0	0	1	3.2
	Uncertain	0	0	1	3.2	0	0	0	0	0	0	0	0
High Girls	High	14	41.2	11	32.4	21	61.8	31	91.2	14	41.2	18	52.9
	Average	13	38.2	17	50	9	26.5	1	2.9	18	52.9	13	38.2
	Below Average	3	8.8	2	5.9	2	5.9	1	2.9	0	0	2	5.9
	Uncertain	2	5.9	1	2.9	1	2.9	0	0	1	2.9	0	0
Low Girls	High	9	26.5	10	29.4	21	61.8	29	85.3	14	41.2	16	47.1
	Average	24	70.6	22	64.7	13	38.2	5	14.7	20	58.8	18	52.9
	Below Average	0	0	0	0	0	0	0	0	0	0	0	0
	Uncertain	0	0	1	2.9	0	0	0	0	0	0	0	0

Table XXV
PARENTS' RATINGS OF CHILD ON SOCIAL TRAITS AND ATTITUDES (Continued)

	RATINGS	TRAITS									
		ADJUSTS SATISFACTORILY TO FAILURE		TRUSTWORTHY		COURTEOUS AND WELL-MANNERED		UNSELFISH, FAIR AND CONSIDERATE		UNPREJUDICED	
		Number	%age	Number	%age	Number	%age	Number	%age	Number	%age
High Boys	High	2	6.5	20	64.5	12	38.7	11	35.5	17	54.8
	Average	22	71.0	11	35.5	19	61.3	20	65.4	14	45.2
	Below Average	7	22.6	0	0	0	0	0	0	0	0
	Uncertain	0	0	0	0	0	0	0	0	0	0
Low Boys	High	5	16.1	23	74.2	11	35.5	11	35.5	20	64.5
	Average	20	64.5	7	22.6	19	61.3	18	58.1	9	29.0
	Below Average	5	16.1	0	0	0	0	1	3.2	0	0
	Uncertain	0	0	0	0	0	0	0	0	1	3.2
High Girls	High	7	20.6	24	70.6	16	47.1	13	38.2	22	64.7
	Average	20	58.8	9	26.5	15	44.1	18	52.9	10	29.4
	Below Average	4	11.8	0	0	2	5.9	2	5.9	1	2.9
	Uncertain	2	5.9	0	0	0	0	0	0	0	0
Low Girls	High	4	11.8	26	76.5	18	52.9	13	38.2	24	70.6
	Average	20	58.8	8	23.5	16	47.1	19	55.9	8	23.5
	Below Average	7	20.6	0	0	0	0	2	5.9	0	0
	Uncertain	2	5.9	0	0	0	0	0	0	2	5.9

necessarily irrespective of I.Q. but irrespective of the moderately and highly gifted categories as established in this study.

On a four point scale (high, average, below average and uncertain) parents were asked to rate their child on 11 traits: (1) socially active in school, (2) popular at school, (3) accepts responsibility, (4) interested in school work, (5) appreciates beauty and has good taste, (6) cooperative and shares well, (7) adjusts satisfactorily to failure, (8) trustworthy, (9) courteous and well-mannered, (10) unselfish, fair and considerate, and (11) unprejudiced. These data are reported in Table XXV.

In rating the child on social activities in school, a larger percentage of highly gifted girls were rated "high" than any of the other groups, with moderately gifted girls being rated "high" proportionally less than any other group. The range of ratings for the highly gifted girls was greater than that of any other group. School popularity ratings indicated moderately gifted boys as being substantially more popular than any of the other three groups.

The highly gifted girls appeared to be rated more often "high" in interest in school work, cooperation, and their ability to adjust satisfactorily to failure than any of the other groups. The girls, both highly gifted and moderately gifted, were more often rated "high" than the boys in accepting responsibility, interest in school work, cooperation, and courtesy. Boys, however, in none of the areas, were more often rated "high" than girls. In appreciating beauty and having good taste, the moderately gifted boys were more often rated "high" than any of the other three groups.

Because of the superiority in intelligence of the subjects in this study, their parents' ratings on their ability to adjust satisfactorily to failure is of particular interest. Of the eleven areas rated, there were far fewer "high" ratings in this one. The highly gifted boys appeared to have fewer who were rated as "high" in this area than the other three groups, while the highly gifted girls had more rated as "high" than the other three groups. Indeed, the question can well be asked if this ability to adjust to failure is not an important area of concern for those interested in the education of the gifted.

While virtually all of the parents reported their children to be either "average" or "high" on the trait, "Unprejudiced," it is noteworthy that the moderately gifted boys were more often rated "high" than any other group to the extent of a difference of 23 percentage points between them and the nearest rating, that of the moderately gifted girls.

The results of these ratings must be interpreted remembering that parents made the rating and the results therefore reflect how the parent believes his child behaves and believes. The clear-cut differences between

Table XXVI

PARENTS' RATINGS OF CHILD ON EMOTIONAL ADJUSTMENT

RATINGS		TRAITS							
		HAPPY, WHOLESOME NATURE		CALM AND POISED		WHOLESOME SEX ATTITUDE		GENERALLY SECURE AND CONFIDENT	
		Number	%age	Number	%age	Number	%age	Number	%age
High Boys	High	15	48.4	7	22.6	9	29.0	13	41.9
	Average	15	48.4	22	71.0	18	58.1	18	58.1
	Below Average	1	3.2	1	3.2	0	0	0	0
	Uncertain	0	0	1	3.2	3	9.7	0	0
Low Boys	High	15	48.4	7	22.6	11	35.5	13	41.9
	Average	13	41.9	17	54.8	12	38.7	13	41.9
	Below Average	2	6.5	6	19.4	0	0	3	9.7
	Uncertain	0	0	0	0	5	16.1	1	3.2
High Girls	High	18	52.9	17	50.0	15	44.1	21	61.8
	Average	12	35.3	13	38.2	16	47.1	8	23.5
	Below Average	3	8.8	3	8.8	0	0	2	5.9
	Uncertain	0	0	0	0	1	2.9	1	2.9
Low Girls	High	18	52.9	12	35.3	12	35.3	18	52.9
	Average	16	47.1	19	55.9	19	55.9	14	41.2
	Below Average	0	0	3	8.8	0	0	2	5.9
	Uncertain	0	0	0	0	1	2.9	0	0

Table XXVI

PARENTS' RATINGS OF CHILD ON EMOTIONAL ADJUSTMENT (Continued)

RATINGS		TRAITS							
		FREE FROM EVASION AND RATIONALIZATIONS		FREE FROM NERVOUS HABITS		MODERATE IN DAYDREAMING		GOOD SENSE OF HUMOR	
		Number	%age	Number	%age	Number	%age	Number	%age
High Boys	High	8	25.8	5	16.1	5	16.1	20	64.5
	Average	19	61.3	21	67.7	23	74.2	11	35.5
	Below Average	3	9.7	5	16.1	1	3.2	0	0
	Uncertain	1	3.2	0	0	2	6.5	0	0
Low Boys	High	12	38.7	13	41.9	9	29.0	19	61.3
	Average	15	48.4	12	38.7	20	64.5	9	29.0
	Below Average	2	6.5	4	12.9	0	0	2	6.5
	Uncertain	0	0	0	0	0	0	0	0
High Girls	High	14	41.2	10	29.4	13	38.2	19	55.9
	Average	17	50.0	17	50.0	16	47.1	13	38.2
	Below Average	2	5.9	6	17.6	3	8.8	1	2.9
	Uncertain	0	0	0	0	0	0	0	0
Low Girls	High	12	35.3	15	44.1	7	20.6	17	50.0
	Average	20	58.8	14	41.2	25	73.5	17	50.0
	Below Average	2	5.9	5	14.7	1	2.9	0	0
	Uncertain	0	0	0	0	0	0	0	0

Table XXVII

PARENTS' RATINGS OF CHILD'S WORK HABITS

RATINGS		TRAITS							
		INDUSTRIOUS		ORDERLY AND NEAT		EFFICIENT IN STUDY AND INDIVIDUAL WORK		EFFICIENT IN GROUP ENDEAVOR	
		Number	%age	Number	%age	Number	%age	Number	%age
High Boys	High	14	45.2	5	16.1	10	32.3	12	38.7
	Average	15	48.4	14	45.2	18	58.1	19	61.3
	Below Average	1	3.2	12	38.7	3	9.7	0	0
	Uncertain	1	3.2	0	0	0	0	0	0
Low Boys	High	16	51.6	5	16.1	19	61.3	14	45.2
	Average	13	41.9	18	58.1	10	32.3	15	48.4
	Below Average	1	3.2	7	22.6	1	3.2	0	0
	Uncertain	0	0	0	0	0	0	1	3.2
High Girls	High	22	64.7	10	29.4	25	73.5	16	47.1
	Average	10	29.4	16	47.1	7	20.6	13	38.2
	Below Average	0	0	6	17.6	1	2.9	1	2.9
	Uncertain	1	2.9	1	3.2	0	0	3	8.8
Low Girls	High	19	55.9	15	44.1	24	70.6	19	55.9
	Average	13	38.2	17	50.0	9	26.5	14	41.2
	Below Average	1	2.9	2	5.9	1	2.9	0	0
	Uncertain	0	0	0	0	0	0	0	0

the boys and the girls on acceptance of responsibility and courtesy, the significant difference of the "Unprejudiced" rating of moderately gifted boys, and the lower ratings on adjustment to failure all present areas in need of further study.

Parents' ratings of their child's emotional adjustment are reported in Table XXVI. The eight traits on the Witty scale are: (1) happy, wholesome nature, (2) calm and poised, (3) wholesome sex attitude, (4) generally secure and confident, (5) free from evasions and rationalizations, (6) free from nervous habits, (7) moderate in daydreaming, and (8) good sense of humor. Noteworthy is the great difference in reported freedom from nervous habits between the high and moderate group, favoring the moderately gifted group. On sense of humor, both moderately and highly gifted boys were rated more highly than girls.

Parents' ratings of their child's work habits are reported in Table XXVII. It is apparent that the highly gifted girls are most often rated industrious, while the highly gifted boys are least often so rated (even less often than either of the moderately gifted group), although the differences are not great. Girls are reported more often than boys as being orderly and neat, with moderately gifted girls more often so rated than highly gifted girls. The highly gifted boys were least often reported as high in "efficient in study and individual work" and "efficient in group endeavor."

Summary

The subjects in the study were found to be well adjusted. If major differences exist in the adjustment of moderately and highly gifted children, the instruments and procedures used in this study were not sensitive enough to detect them. Parents' ratings indicated some differences both between the groups and between the sexes. Attempts to measure self-concept met with limited success.

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Chapter VII

SUMMARY, IMPLICATIONS AND RECOMMENDATIONS

Learning more about gifted children has come to be recognized increasingly as more important. Early attention to identification procedures and even characteristics of mentally precocious children are now recognized as essential first steps, but not at all an answer to the problems of educating such children. Controversy over identification procedures often resulted from the now apparent fact that even within the area of mental giftedness, there were differences in kinds of ability and various degrees of these abilities. Lists of characteristics of gifted children encountered the same difficulties, for while even a majority of mentally gifted children might seem to possess certain characteristics, there were those who could not be so characterized and, indeed, there is even reason to suspect that many of the characteristics may be artifacts of superior environment rather than superior intelligence. The need for studies of gifted children continues, with attention to ways in which children categorized as gifted differ from one another. The present study was intended to provide information about two groups of gifted children, one group clearly identified as highly gifted and another identified as moderately gifted.

The highly gifted children in the present study were defined as being those children nominated by intern psychologists from throughout the state of Ohio in grades three through six who received an I.Q. score of 148 or above on the Revised Stanford-Binet, Form L-M, Tests. These children were then matched with children of the same sex and grade who had received a score of 120 through 134 on the Binet Tests. A total group of 130 children was included in the study, 65 identified as highly gifted matched with 65 identified as moderately gifted.

The highly gifted group included only children who were three standard deviations above the norm, while the moderately gifted group included children between roughly one standard deviation and two standard deviations (but none below 120 I.Q. score) above the norm. It was believed that by studying these two groups of children, and eliminating from the study any child whose Binet I.Q. score was between 135 and 148, there was less likelihood of contamination of any found differences in the groups as a result of standard error of measurement which might result in an overlap in the two groups. While there might be some objection to the labeling of the groups as highly and moderately gifted, there can be little objection to the point that in terms of their performance on this particular test, the subjects in each of the two groups performed differently, with the highly gifted group performing significantly better than the moderately gifted group.

Information was collected from parents, teachers, school records, and the children themselves in a variety of areas. The Witty Home Information Record was used to obtain parents' reports. The Children's Personality Questionnaire (IPAT) was used as a standardized measure of adjustment, while attempts were made to develop a self-concept scale to determine what the children thought of their own ability to achieve. The Warner Scale to measure socio-economic status of the children was used, as were reports from teachers, parents and the children themselves. The Iowa Tests of Basic Skills were administered to all of the children to provide achievement data in addition to that obtained from other sources.

The data were treated in a variety of ways, each of which was believed to be appropriate for that particular finding. It must be restated that the results of this study cannot be used to generalize about all highly and moderately gifted children, but must be limited to those defined as highly and moderately gifted children in this particular study. The group is not necessarily representative even of such children in Ohio. Before generalizations can be made beyond the confines of this study, further research must be done with other groups of moderately and highly gifted children. The summary is of this particular study while the implications are for those who are interested in pursuing the subject beyond this particular study.

The purpose of the study was to compare a group of highly gifted elementary school children with a group of moderately gifted children, in an attempt to determine any differences which might exist between them. Data pertinent to the following questions were obtained.

1. In what areas of educational development do moderately and highly gifted elementary school children differ, and to what extent does this difference exist?
2. To what extent do the moderately gifted and highly gifted children in this particular study differ in personal, social, educational, and family adjustment?
3. Are there differences in the family backgrounds of moderately and highly gifted children?

Summary

There has been very little research on characteristics of highly gifted children, and what research there has been has failed to distinguish clearly between the highly gifted group and that group of lesser intelligence immediately below them in the intellectual range. Because of the increase in the standard error of measurement in intelligence testing as the scores deviate further above the norm, the likelihood of a group being distinctively labeled, without contamination from the next lower group, is greatly decreased unless some gap is allowed between the two groups for the error in measurement. This has not been done previously so far as the present investigators know.

Inadequacy of Group Testing

Group I.Q. testing would have eliminated 11.5 per cent of the subjects included in the present study because they did not score above the lower cut-off of 120 I.Q. on the group measure. Furthermore, 85.8 per cent more subjects were obtained for the highly gifted group (148 I.Q. score and above) using the Binet results than if reliance had been left entirely to group I.Q. scores.

The highest I.Q. scores were found among the younger children. In virtually all instances the older subjects "hit the ceiling" of the test. This is important not in that it indicates any lowering of actual intelligence, but, for highly gifted children in particular, that the Binet test places a ceiling, which becomes increasingly more apparent from year to year, on their scores.

Excess of Highly Gifted Boys

The nominating procedure resulted in an excess of highly gifted boys and moderately gifted girls. (The necessity to match the subjects resulted in final groups slightly larger for the girls, but this was a result of the limitations placed by having fewer moderately gifted boys and highly gifted girls.) This difference in numbers of nominations may have been due to (a) the manner in which they were selected, (b) the test favoring boys at the upper extreme, (c) the existence of more highly gifted boys, (d) other unknown factors, or (e) some combination of two or more of these factors.

Family Background Favors Highly Gifted

There were no significant differences in the size of families from which the moderately and highly gifted groups come. The majority of each group were first born children. The parents of the subjects were relatively young, around mid-twenties, at the time of the child's birth.

The highly gifted girls in this study had parents slightly older than the other groups, but the difference was not significant.

There was a difference (significant at the .01 level) in favor of the highly gifted group on rating of parents' income and on rating of dwelling area. Rating of house type indicated higher scores (significant at the .05 level) for the highly gifted group. Ratings by parents, however, as opposed to that of school administrators, revealed no significant differences. It is possible that the more favorable ratings by school administrators for the highly gifted group was a result of more objectivity, or the similarity of ratings by parents of both the moderately and the highly gifted groups could reflect the tendency to rate such factors toward the norm rather than give any indication of "bragging."

The parents of the subjects in each of the four groups were exceptionally well educated, but the parents of the highly gifted group had more education than the parents of the moderately gifted group. The fathers of the highly gifted boys were the best educated. The mothers of the subjects in each of the four groups generally had less education than did the fathers, but the same rank was maintained as for the fathers (i.e. the mothers of the highly gifted boys were the best educated.) About 15 per cent of the parents of the moderately gifted group had less than a high school education. There were more fathers of subjects in the highly gifted group in professional and managerial occupations than there were in the moderately gifted group.

Accomplishments

There appeared to be a tendency for the highly gifted subjects to score higher on measures of creativity than did the moderately gifted subjects. Parents' rating of their child on creativity, however, indicated no apparent differences.

All of the highly gifted girls play a musical instrument, while only 50 per cent of the moderately gifted girls play an instrument. Only 20 per cent of the boys, both highly gifted and moderately gifted, play a musical instrument.

Adjustment and Self-Concept

Standardized measures of personality (Children's Personality Questionnaire) indicated adjustment well within the normal ranges for the subjects in each of the groups. No significant differences in personality were detected between the two groups except in the "surgency" characteristics which indicated the highly gifted group was more "exuberant, talkative, happy-go-lucky, cheerful, quick and alert." Parents' reports of adjustment of their children indicated few differences between the subjects in each of the groups.

The group of highly gifted boys had a better self-concept of their ability to achieve than did the highly gifted girls, but there was no difference between the self-concepts of the highly and moderately gifted groups as a whole. The instrument appeared to measure the subject's attitude about his ability to achieve more than it measured other facets of self-concept.

Listing of behavior irregularities was done by only about 20 per cent of the parents, with slightly more parents of highly gifted subjects, both boys and girls, indicating some irregularity than parents of moderately gifted subjects. In both groups, parents of boys listed more than did parents of girls. No real significant difference between groups was noted. Sibling rivalry was the most frequently listed behavior irregularity.

In stating their three wishes, children in the interview sample clearly indicated that the moderately gifted group was more "outer-directed" than the highly gifted group, while the highly gifted group exhibited more "self-aggrandizement." Twice as many of the parents of the highly gifted reported that their children preferred adult companions as did parents of the moderately gifted.

Parents' ratings of their child's adjustment clearly indicate their awareness of his average or above average adjustment. Ratings of freedom from nervous habits indicate that the moderately gifted group is better adjusted in this respect.

Highly gifted girls are most often rated "high" as "industrious," while highly gifted boys are rated least often as "industrious." Moderately gifted girls were rated "high" more often than any of the other groups in being "orderly and neat."

Teachers' Perception

Teachers did not perceive many of the children in the study as the most outstanding in the classroom in any of the ten categories from the "Who Is It?" questionnaire (as listed previously in the chapter on adjustment). Whether teachers believed that these children were already being given enough additional attention, or whether the children were not actually the outstanding ones in the classroom cannot be determined. Even in the area of intelligence, the children in the present study were not chosen in any large number as the top child in the class.

School Achievement and Program

The girls in the highly gifted group had a somewhat better record of attendance in school than any of the other groups, while the highly gifted boys had a somewhat poorer record of attendance. The differences between the groups, however, are not large.

In achievement, the children scored on the Iowa Tests of Basic Skills at a level sufficiently above their actual grade placement to indicate the virtual absence of so-called underachievement in both the highly gifted and the moderately gifted groups. The findings of earlier studies indicating achievement at a level approximately two years above actual grade placement is substantiated by this study.

None of the children in the present study scored below grade placement in achievement. The girls did better in achievement at the third grade level, but by the sixth grade this difference had ceased to exist. As the children progressed through the elementary grades, the highly gifted group demonstrated a greater increase in excess grade placement. The total mean excess grade equivalent scores of the moderately and highly gifted groups were significantly different (at the .01 level) in favor of the high group.

The total number of children reported to have been in a special class program is extremely low. Only six of the highly gifted and four of the moderately gifted had been in special classes, and all of these were in special classes which were a part of the state supported demonstration-research projects (under the auspices of the Division of Special Education of the Department of Education of Ohio) and not directly a result of the initiative of the local school system.

An analysis of mechanical aspects of the writing ability of the subjects produced no significant differences between groups on sentence length, level of word difficulty, and use of adjectives, adverbs and prepositional phrases.

Physical Development

Generally, the superiority of gifted children in physical development was demonstrated by the findings of this study, but the major purpose of distinguishing between highly gifted and moderately gifted did not result in any outstanding differences. Coordination and strength was the only area on which the highly gifted group was not similar to the moderately gifted group. This difference might well be one resulting from less attention to physical skill and therefore less practice, rather than any inherent difference.

Implications

The implications from a study such as the one just reported are endless. Each reader will undoubtedly perceive many different ones from those stated by the authors of this report. The important thing, of course, is that research not be an end in itself, but that it provide additional information, substantiate or refute previous findings, and above all suggest future courses of action for both research and educational procedure. Undoubtedly, we know far more about children than we are now using. This is particularly true in the area of the gifted where educational provisions have been slow to develop in spite of the constant demonstration of the need for special programming. The implications stated below are intended only to provide a beginning for additional action in order that the primary goal of education can be fulfilled—the development of each child to the limit of his abilities.

Testing Program

There is an urgent need for a planned program of individual intelligence testing in the early elementary grades for all children who give any indication of unusually high mental ability. Group intelligence tests are not a satisfactory measure of high intelligence, yet there is evidence that individual testing is not being conducted due to either a lack of trained personnel to administer the test or too much attention to testing of problem cases or cases of mental retardation.

If further study of the highly gifted continues to identify more highly gifted boys than highly gifted girls, the methods of referral as well as the testing instruments themselves must be examined more carefully. The great danger is not that there may or may not be a preponderance of one sex over the other, but that in some manner whether certain intellectual factors are being overlooked, or our educational methods are somehow supporting certain types of activities which tend to encourage an unbalanced development favoring one sex over the other.

In spite of the high achievement scores obtained by the highly gifted children, there is obviously a need for the development of an achievement testing program which measures more distinctly the upper levels of the child's achievement, as well as the areas of weakness or gaps in learning which can occur on present tests without being apparent because of the outstandingly high scores which tend to cover up deficiencies.

Achievement Level

The extremely high achievement level of the highly gifted subjects clearly indicates that the existing program does not hinder their academic progress to any great degree, and indeed apparently even encourages it up through the sixth grade. One can only speculate what happens after completion of the sixth grade, however, when most children move into a departmentalized program in which subject matter is taught primarily out of a single text, with all-class assignments, a single grading system, and encouragement to strive for mastery of material which the highly gifted have mastered to a level at least two years and in a great many instances three and four years higher than their actual grade placement.

The high achievement level places a great responsibility upon the junior and senior high schools to make those provisions, whether special grouping, acceleration or flexible curriculum, essential for children achieving at least two years above grade level. But merely making administrative provisions will not alter the basic need for teaching procedures, materials and content different from that presented to the regular classes.

Special Provisions

Although there is much attention to the special needs of gifted children, there is no evidence in the present study that attempts have been made to provide for the moderately gifted children, much less the highly gifted, in a manner different from that of the average. In spite of so much attention and effort on the part of the Department of Education in Ohio to disseminate information about the gifted and to encourage demonstration projects for the gifted, there is an alarming absence of effort on the local level to provide for the gifted in any organized manner.

The highly gifted more obviously need the benefits of special programming than do the moderately gifted, but because of the scarcity of highly gifted children, it must be expected that programs of special classes will likely contain both moderately and highly gifted children. The teacher's responsibility in such a class should be to differentiate instruction within such a group to meet the particular needs of those children identified as highly gifted, as well as the needs, which might indeed be different, of the moderately gifted.

It is not intended to imply that only in special groups can the needs of gifted children be adequately met. The present study itself clearly indicates that in many ways, many of the children have been challenged and have achieved at a fantastically high level within the regular classroom. But one must ask how much better the child might have done had he been in a situation in which the other children were challenging to him, the teacher could devote time to developing the special abilities of this particular type of child, and he was not bound to the rigid curriculum so necessary for children of less ability.

Socio-Economic Status

The socio-economic status of highly gifted children is higher than that of moderately gifted children which suggests the possibility that in order to score at the highest levels of the individual intelligence test, the subject needs the full advantage of all the stimulating experiences more frequently found in families in which economic factors do not limit the activities of the children. That average children also come from the same situations in which stimulating experiences are provided indicates the existence of hereditary factors, but in discriminating between children at the highest levels of intelligence perhaps environmental factors are of greater importance than they are at the lower levels of brightness.

Creativity

The results of this study tend to indicate that there is a relationship between high intelligence and high creativity. It seems logical to expect that this would be true, particularly since the measurement of creativity so closely follows the same procedures used to measure intelligence.

Measurement of Adjustment

There is obviously a need for more refinement of instruments to measure the adjustment of gifted children. Quite likely, the very types of adjustments measured for average children are different from those of gifted and highly gifted children. Because the highly gifted are so perceptive, it is not unlikely that they respond to traditional measures as much in terms of how they believe they should answer as in terms of how they actually feel. The question which must be raised is, "Should the adjustment be measured in the same way and determined on the same scale for gifted and highly gifted children as it is for average and below average children?" Obviously the question cannot be answered with what we now know about gifted children, but it is clear that existing measures of adjustment do not discriminate finely enough to provide insight into the adjustment problems which gifted youngsters must face.

Teachers' Perception of Highly Gifted Children

There is obvious reason to be concerned when classroom teachers do not perceive children with ability more than three standard deviations above the norm as superlative in intelligence, much less in other areas. Perhaps the very differences which this study has tried so diligently to identify between the highly and moderately gifted are operating so that the teacher is confused as to whether or not the child should be listed. To omit a child from a list of superlative ratings is certainly not rejecting him, but it does indicate some lack of understanding of the almost overwhelming possibilities open to this child in future years.

The need is very great for further study of teacher's perceptions of highly gifted children. Perhaps not being identified as superlative has been part of the child's stimulation to achieve at so much higher a level than would have been thought possible, so the finding is not necessarily bad. Probably the lack of information about highly gifted children, because of the scarcity of research as well as the scarcity of highly gifted children, has resulted in the lack of understanding of him and his unique problems.

Portrait of The Highly Gifted Child

The highly gifted child is not in a special class, nor has he skipped any grade. His group I.Q. test does not indicate ability at the "highly gifted" level, but does indicate very superior intelligence. His I.Q. scores appear to drop as he goes beyond the third grade because of the low ceiling of the test which he is already reaching, even at the age of nine. He is likely to be the first born child in a small family. He is achieving two years above his actual grade placement at the third grade level, and this difference between achievement level and grade placement becomes greater as he continues through the elementary grades. His parents are aware of his superior intelligence and success in school work. His parents probably earn more, are in professional and managerial occupations more frequently, live in a better neighborhood and home, and have a better education than do the parents of moderately gifted children. His parents are college educated, but his father has more advanced education than his mother. He is more creative than moderately gifted children, but his parents do not perceive him to be more creative. He is well adjusted, differing only from moderately gifted children in that he is more "out-going," but is not so free from nervous habits. His wishes are "inner-directed." He is not singled out by his teacher for superlative rating. He prefers adult companions to a greater extent than does the moderately gifted child.

The highly gifted boy differs from the highly gifted girl in some ways. She plays a musical instrument, while he does not. Her school attendance is better than his, and his is poorer even than moderately gifted children. Highly gifted boys were found more frequently than highly gifted girls. His father is better educated than hers, and was found in this study to be younger. He has a better self-concept of his ability to achieve than she does, but his parents report that he is less industrious and efficient in both individual and group endeavors. He was not achieving in language and reading as well as she was in the third grade, but by the sixth grade his achievement was equal to hers.

Recommendations

It is apparent from this study of highly gifted youngsters that little is known about them and, indeed, that it is difficult because of the inadequacy of existing tests and the extremely limited number of such children to obtain information which will indicate the needs of this particular group. The highly gifted child frequently differs as much from the moderately gifted as the moderately gifted differs from the average and yet there is no indication that anywhere in Ohio is much being done to differentiate programs, materials or even instructional practices.

Recommendation Number 1: Establishment of a State Registry of Highly Gifted Children. It is strongly recommended that the Department of Education of Ohio establish in the Division of Special Education a statewide registry of highly gifted children. Identification is obviously the first step toward understanding and adequately providing for any group of exceptional children. Because of test limitations, particularly low ceilings, there is ample evidence that the abilities of highly gifted children cannot be measured after the early elementary grades and may therefore never be identified because of the absence of adequate measuring instruments. Unidentified, it is not unlikely that the highly gifted child will conform to the expected pattern of moderately gifted or even high average children. The establishment of a registry can provide the impetus for early individual intelligence testing so that highly gifted children will not be lost as they move from grade to grade or from school to school. The *Registry* can provide a means for a follow-up of highly gifted children, as well as careful study of their needs and the kinds of educational programs which appear to benefit them in particular.

Recommendation Number 2: Promotion of summer workshops for teachers to acquaint them with the characteristics and needs of highly gifted children. In addition to the support which has previously been given to workshops for teachers of gifted children, it is recommended that the Department of Education of Ohio support workshops for teachers specifically directed toward the education of highly gifted children. The workshops should include demonstration classes of such children, probably collected from children listed in the *Registry*.

Recommendation Number 3: Financial excess cost support for identification and education of highly gifted children. The special needs of highly gifted children are probably exceeded only by society's need for the results of the full development of the child's abilities. Education is not a static process which can be financed in the same manner and to the same extent for all. The excess cost of adequately educating highly gifted children will more than be repaid by the ultimate fulfillment of the child's potential.